APPENDIX D

DNRC Limestone West DEIS Public Comment Responses

The following contains DNRC responses to public comment received during the DEIS public comment period. Each comment has an identification number associated with the commenter. In Appendix E, readers can locate specific comments and commenters by using these identification numbers.

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VEGETATION

1. DNRC received 4 comments that expressed concerns regarding the proposed actions potential effects on forest cover types and age classes within the project area.

DNRC RESPONSE: *Impacts of the proposed alternatives of forest cover types and age classes are discussed on pages 73-82 of the DEIS. Cover types and age classes where clearcut with reserves prescriptions are proposed under the action alternatives would change as described on pages 78-80.*

RESPONSE TO COMMENTER ID: 14, 37, 66, 133

2. DNRC received comments from 8 individuals that expressed concerns regarding the proposed actions potential effects on existing old growth and development of future old-growth forests in the project area. These comments are summarized by the following statements followed by DNRC's response to each statement.

1. **Old growth forests should not be logged because they are rare and because the project area contains some of the last old growth on the Gallatin Front.**
   Impacts of the proposed alternatives on old growth within the project area are described on pages 76-82 of the DEIS. As stated on page 76, 119 acres within the project area meet the requirements of DNRC's old growth definition (ARM 36.11.403) based on Green et al. (1992). As stated on pages 76-77, an additional 106 acres in the Nichols Creek drainage met the minimum criteria for number and size of large live trees, but not the age requirement described by Green et al. (1992). As described on pages 79 and 80, no harvesting is proposed in currently existing old growth stands in the project area, and harvesting in areas that meet the criteria for number and diameter of large trees, but not age, would retain sufficient numbers of large trees to meet the minimum criteria for old growth described in ARM 36.11.403 and by Green et al. (1992).

   There are no old growth stands in the project area that would be defined as "unique and rare" as described by ARM 36.11.403. Furthermore, DNRC, as described in ARM 36.11.407, may not necessarily maintain conditions made rare on adjacent ownerships in amounts sufficient to compensate for their loss over the broader landscape, except as it coincides with other agency objectives.

2. **Old growth forests are important for mitigating climate change; trees older than 100 years are more efficient at sequestering carbon.**
   DNRC agrees that old growth forests are an important part of forested landscapes and provide many benefits, including carbon sequestration. As mentioned on pages 79-80 of the DEIS, no old growth forests would be harvested in this project. Some trees older than 100 years old in stands

that are not currently classified as old growth would be harvested under Action Alternatives A and B. A discussion of the potential effects of climate change on Montana's forests is found on pages 318-319 of the DEIS.

3. **Old growth in the project area provides important habitat for wild honey bees.**
DNRC recognizes the importance of old growth forests for providing habitat for a variety of animals and insects. As mentioned on pages 79-80 of the DEIS, no old growth would be harvested in this project. Some older trees in stands not currently classified as old growth would be harvested under Action Alternatives A and B. Additionally, DNRC is required to leave two snags and snag recruits per acre as specified in ARM 36.11.411 to provide wildlife habitat and future coarse woody debris for habitat and nutrient cycling. If an active swarm of honey bees is encountered during harvesting operations, we would leave that tree.

RESPONSE TO COMMENTER ID: 14, 34, 69, 81, 87, 118, 133, 143

3. DNRC received 3 comments that generally express concerns regarding the effectiveness of forest management in addressing insect and disease issues in forest stands.

DNRC RESPONSE: *The Forest Insects analysis in the DEIS (pages 82-86) does not refer to mountain pine beetle and spruce budworm as "unnatural" agents, but rather describes the current levels and impact of those insects within the project area and the potential for ongoing and future activity of those insects associated with each alternative. DNRC generally agrees that silvicultural treatments are not effective in suppressing active large-scale mountain pine beetle outbreaks that have already started; however, the current forest conditions and impacts of mountain pine beetle described in the DEIS (p. 82) are largely the result of past mountain pine beetle activity that occurred in the last decade. Further, the DEIS states that mountain pine beetle activity in the project area has returned to endemic levels (p. 82). Since mountain pine beetle in the project area is not above endemic levels or in an "outbreak" stage, stopping such activity is not an objective of this project. Instead, this project aims to capture the value of already dead and dying trees from past mountain pine beetle activity, while also enhancing age class diversity and altering stand conditions to reduce susceptibility to future outbreaks.*

RESPONSE TO COMMENTER ID: 69, 72, 114

4. DNRC received comments from 9 individuals that express concerns regarding the effectiveness of forest management in reducing wildfire hazard and mitigating fire behavior in the project area. These comments are summarized by the following statements followed by DNRC's response to each statement:

1. **Forest thinning will not minimize fire risk/severity and may instead increase fire risk/severity**.
DNRC disagrees with this statement and the analysis presented in the DEIS on pages 86-92, as well as a substantial amount of peer-reviewed research, contradicts that assertion. Predicted

amounts of forest fuels and incidence of crown fires increase over time under no action (page 91), while decreasing under action alternatives A and B (pages 91 and 92). Our results are supported by a substantial body of research showing that forest thinning is an effective tool to mitigate fire hazard, including Agee and Lolley (2006), Agee and Skinner (2005), Arno and Fiedler (2005), Fiedler et al. (2004), Fiedler et al. (2010), and Youngblood et al. (2008), among others.

Commenters reference statements by Dr. Dominick DellaSala in supporting their view regarding the effectiveness of forest thinning to reduce fire risk and severity. DNRC responds to those statements as follows:

a. *"thinning-from-below of small-diameter trees followed by prescribed fire in certain forest types can reduce fire severity (Brown et al. 2004, Kalies and Kent 2016), but only when there is not extreme fire weather (Moritz et al. 2014, Schoenagel et al. 2017). Fires occurring during extreme fire-weather will burn over large landscapes, regardless of thinning…". We agree that thinning can reduce fire severity, although we note that Fiedler et al. 2004 found that treatments focused on thinning only small-diameter trees are less effective than more comprehensive prescriptions that focus on creating a sustainable stand structure involving the treatment of all size classes. Although extreme fire-weather can result in extensive burned areas, we disagree that forest management is ineffective in such scenarios. The wind speed, air temperature, and fuel moistures modeled in the analysis (p. 86) are similar to the threshold for watch out conditions that can greatly increase fire behavior (FAM-IT 2018) or that would prompt a red flag warning. Under the modeled conditions, the analysis clearly shows the benefit of the action alternatives in reducing forest fuels and mitigating potential fire behavior. This, in turn provides more opportunities for effective suppression, which is a critical consideration in this setting given the project area's location in the wildland-urban interface.*
b. *"thinning too much of the overstory trees in a stand…can increase the rate of fire spread by opening tree canopies and letting in more wind…". Our analysis is consistent with this statement, as predicted surface flame lengths increase immediately following harvest due to increased amounts of fine fuels and air flow at the surface (p. 92); however, we would argue that this statement applies primarily to the rate of spread of surface fires rather than crown fires, as our analysis shows that the crowning index (the wind speed necessary to support an active or running crown fire) increases substantially under the action alternatives, meaning that higher wind speed is needed to support a crown fire (p. 89, 92). Research by Agee and Lolley (2006) and Fiedler et al. 2004 supports our results; although harvesting may result in increased air flow through the stand, it also increases the distance between tree crowns, making it more difficult for a fire to spread through the crown. Furthermore, opening the tree canopy not only decreases the potential for crown fires, but also increases opportunity for effective fire suppression by enhancing access to the area for ground-based operations and increasing the effectiveness of aerial retardant application by allowing more retardant to reach the surface instead of being intercepted by the tree canopy.*
c. *"there is a very low probability of a thinned site actually encountering fire during the narrow window when tree density is lowest. For example, the probability of a fire hitting an area that has been thinned is about 3-8% on average, and thinning would need to be repeated every 10-*

15 years (depending on site productivity) to keep fuels at a minimum (Rhodes and Baker 2008)." We do not discuss the probability of a fire's ignition, as this is dependent on several factors that we have no or limited basis to analyze, but rather focus on analyzing potential fire behavior given the current and expected conditions that would occur under each alternative. However, this statement would seem to support actions involving treatment since the research cited in this statement indicates that thinned areas are less likely to encounter a fire. We do agree that future treatments are necessary to maintain forest and fuel conditions that effectively mitigate the potential of severe wildfires (Fiedler et al. 2004, Youngblood et al. 2008).

2. Forest thinning for fuel reduction should focus on areas near homes, rather than outlying areas, and must include effective slash disposal.

We agree with this statement and argue that this project does exactly that. The project area is located within the wildland-urban interface as defined in the Gallatin County Community Wildfire Protection Plan (GCEM 2006), with several homes near the perimeter of the project area and substantial human use occurring within the project area. As such, this project represents a continuation of any fuel and fire hazard reduction activities conducted by other landowners and homeowners in the vicinity and provides additional enhancement of their activities. In addition, the project area is adjacent to, on both the east and west, priority landscapes identified by Governor Bullock as having significant threats to forest and watershed health, as well as threats to public safety or loss of critical infrastructure due to catastrophic wildfires.

We agree the effective slash disposal is an important component fuel and fire hazard mitigation (Agee and Lolley 2006). On page 88, the DEIS states that on average, 4.0 to 5.7 tons per acre of coarse material (half the current amount) would be retained in harvested areas for nutrient cycling. The remaining slash would be treated (piled and burned) in accordance with the ARM regarding control of timber slash and debris (ARM 36.11.201-232).

3. Climate change, not the presence of dead trees, will lead to more fire and extreme fire behavior, regardless of logging.

We state on page 318 of the DEIS that climate change is expected to alter natural disturbance regimes in Montana's forests. Commenters rely on comments made by Dr. Andrew Larson to make the point that dead trees are part of a healthy and functioning forest ecosystem, and that climate and weather drive fire rather than the presence of dead trees. We agree that dead trees are part of healthy and functioning forest ecosystems. ARM 36.11.411 and 36.11.414 direct DNRC to leave prescribed amounts of both snags and coarse woody debris following timber harvesting to ensure that material is retained for the benefits that they provide a forest ecosystem, including wildlife habitat and nutrient cycling.

We also believe that Dr. Larson's comments should be considered in their entirety instead of as singular statements or phrases taken out of context to comport a view that changing climate will overrun any attempts to mitigate potential fire behavior. Dr. Larson also states in the same article cited by the commenters that management may change how fires burn and that society, as

a whole, should be planning for fires since they are a natural part of many Western landscapes. Additionally, there is not agreement within the scientific community about climate being the primary cause of increased wildland fire incidence in the past three decades. Agee and Lolley (2006) state that while climate factors into the extent of acres burned, increased tree mortality from recent fires is more likely due to accumulated fuels than climate.

4. Beetle-killed/dead trees are less susceptible to fire than live trees.

Commenters support claims that beetle-killed and dead trees are less susceptible to fire by citing Dr. DellaSala's testimony that "beetle-killed forests are not more susceptible to forest fires…because when conifers die due to drought or native bark beetles, the combustible oils in the needles quickly begin to dissipate, needles and small twigs begin to fall to the ground. Without the fine fuels that facilitate fire spread, potential crown fires are actually lowered in forests with beetle mortality (Donato et al. 2013)." This statement is perhaps an oversimplification of a very complex issue that is dependent on many factors and upon which there is not agreement in published scientific literature on the topic. Research that studied foliar moisture and chemistry in lodgepole pine needles following mountain pine beetle attack disputes the idea that beetle-killed forests are not more susceptible to fire, finding that decreased moisture content and changes in foliar chemistry increase the foliar flammability of beetle-attacked trees, requiring less heat to ignite the foliage of attacked trees and increasing crown fire potential as long as foliage remains on the tree (Jolly et al. 2012a). Jolly et al. (2012b) also state that substantial changes in stand structure occur as beetle-attacked trees die, affecting both surface and crown fire behavior. In general, as crown needle biomass decreases, there is a continuous reduction in crown fire potential as an attack progresses, with highest potential for crown fire occurring while dry needles remain on the tree and decreasing as needles fall. However, the shedding of canopy fuels increases surface fuel loads, particularly in the years following a beetle outbreak, which increases surface fire intensities and in turn increases the possibility for crown fire initiation (Jolly et al. 2012b). Jolly et al. (2012a) further state that "the predictability of fire behavior in beetle-attacked stands is further complicated when surviving trees are interspersed among dead trees. The mosaic of dead and living trees may influence how the fire transitions and burns through a stand." Donato et al. (2013) also state that the accumulation of coarse fuels in stands that are past the "red" stage (i.e., needles have been shed) of an outbreak may increase burn residence time and heat release, both of which factor into the severity of a fire's effects. Undoubtedly, this is a complex issue that scientists are still working to understand.

Regardless, the analysis of fire behavior (p. 86-92) is based on current forest and fuel conditions in the project area and uses those to predict the potential and conditions necessary for certain types of fire behavior and the effects on such of each alternative. In that sense, the question of whether beetle-killed or dead trees are more or less susceptible to fire is beyond the scope of this analysis.

5. Forest preservation does not equate to higher fire severity.

Commenters cite testimony and research by Dr. DellaSala stating that "fires burned most intense in previously logged areas, while they burned in natural fire mosaic patterns in wilderness, parks, and roadless areas, thereby maintaining resilient forests."

The question of whether "protected" areas burn more severely than "unprotected" areas is beyond the scope of this project. Most of the project area has not been previously logged, nor is it currently under "protection". Fire severity is defined by Helms (1998) as "the degree to which a site has been altered or disrupted by fire; a product of fire intensity, fuel consumption, and residence time." Our analysis does not speak to the potential "severity" of a fire, but instead evaluates current forest conditions within the project area and predicts the expected fuel amounts, fire type, and conditions necessary for certain types of fire behavior associated with each alternative. Our analysis concludes that the action alternatives would result in both reduced fuels and incidence of crown fires compared to alternatives with no or delayed action. Research by Agee and Lolley (2006), Agee and Skinner (2005), Arno and Fiedler (2005), Fiedler et al. (2004), Fiedler et al. (2010), and Youngblood et al. (2008), among others, supports our conclusions.

Furthermore, commenters cite a statement by Dr. Andrew Larson regarding the efficacy of management that appears to conflict with DellaSala's notion that managed areas burn with greater severity: Larson states "What we might be able to achieve with a more active vegetation management program are areas that don't burn with as high a severity, we also might have safer working environments for fire managers." We agree with Dr. Larson's statement and believe that it supports the overall objectives of this project.

Finally, commenters question the necessity of forest management by providing an example of a wildland fire that was managed for resource objectives. We do not disagree that some wildland fires can provide ecosystem benefits in some forests; however, the project area's location in the wildland-urban interface (GCEM 2006) does not lend itself to a managed wildland fire scenario—given the proximity to residences and private property DNRC would attempt to suppress any wildland fires that start in the area. Agee (2002) states that "there is a temptation to 'let nature takes its course' and to allow forest to recover and develop naturally. Yet, such a passive approach to management is not sustainable forest strategy in ecosystems that have a substantial history of natural disturbance, including forests on almost every continent." Agee (2002) goes on to say that "No preservation plan will succeed unless it recognizes disturbance as an ecosystem process and incorporates an effective strategy to manage natural disturbance. Given our predicament, a realistic management goal in reserved as well as unreserved forests is to reduce potential wildfire intensities and to lower crown fire potential. This is known as managing for a 'firesafe' forest… The goal should be to restore the fire resiliency of the historic forest by bringing back the fuel structure of historic…fire regimes. Passive management cannot restore these conditions; active management is necessary."

RESPONSE TO COMMENTER ID: 21, 52, 64, 66, 72, 98, 114, 148, 166

5. DNRC received 4 comments that generally express concerns regarding forest management activities adversely affecting native flora, threatened, endangered, or sensitive plant species, or unique and rare habitats within the project area.

DNRC RESPONSE: *Potential effects of each alternative on plant Species of Concern, including threatened, endangered, or sensitive plant species, are described on 92-95 of the DEIS. As stated in the DEIS, no Species of Concern have been found within the project area, and 10 Species of Concern have been observed within or near the cumulative effects analysis area (Southeast Bozeman Landscape). Because no Species of Concern have been found in the project area, there are no expected impacts under any alternative to such species. Calypso, spotted and striped coralroot orchids are present in the project area; however, they have not been identified as a Species of Concern, and Lesica (2012) indicates that those species are widely distributed throughout western Montana. No unique and rare habitats, as defined by ARM 36.11.403, are found within the project area.*

RESPONSE TO COMMENTER ID: 82, 83, 141, 159

6. DNRC received 13 comments that generally express concerns regarding timber harvest and road building activities affecting the introduction or spread of noxious weeds in the project area.

DNRC RESPONSE: *The current condition and potential effects of each alternative on noxious weed presence and spread is presented on pages 94 and 95 of the DEIS. We state that Alternatives A and B are likely to facilitate the spread of noxious weeds or introduce new weeds to the project area because of soil disturbance and reduction of canopy cover associated with road building and timber harvesting. We outline measures that we would take to minimize noxious weed introduction and spread on page 95, including pre- and post-treatment of weed populations, equipment washing, limiting soil disturbance, re-seedling roads with grass, and development of a comprehensive weed management plan including herbicides and biological controls. Collectively, we expect these activities to minimize the potential for the spread of noxious weeds in the project area.*

As explained on pages 325-326, we acknowledge that noxious weeds can affect soil nutrient flux and organic matter distribution; however, because the primary locations of noxious weed spread are along roads and landings that would be permanently converted from forest to transportation use, we expect minimal impacts to soil productivity from noxious weeds.

The grass mixture that will be used to re-seed roads is 29.5 percent thickspike wheatgrass and 23.5 percent each of slender wheatgrass, bluebunch wheatgrass, and mountain brome. Grass seed would be sown at a rate of 17 lbs/acre, with expected coverage of 85-90 percent.

Weed management activities would be accomplished through DNRC's Forest Improvement (FI) Program. The FI Program is funded by fees charged to timber sale purchasers, in addition to stumpage payments, as outlined in MCA 77-5-204(4). A site-specific weed management plan would not be developed until the completion of harvesting operations, as the full extent of weed issues would not be known until that time.

Management activities would likely involve multiple herbicides (the use of which cannot be prescribed until the species and extent of weed occurrence after harvesting is known), multiple methods of application including backpack sprayers, all-terrain vehicle mounted boom sprayers, and possible aerial application. We would attempt to notify the public via signage at access points prior to and during application and would also list the herbicides used and safe re-entry period. All herbicide application would be done in accordance with label instructions. Based on weed management costs from similar projects, annual weed management costs are estimated to be approximately $12,600 for Alternative A and $7,850 for Alternative B.

We acknowledge the potential for noxious weed seed to cross property boundaries; indeed, recreational use and grazing activity has and continues to introduce and spread noxious weeds among various ownerships within and adjacent to the project area. However, the extent of weed management activities conducted by DNRC for this project would be limited to State lands within the project area and adjoining State-owned parcels. Potential weed management activities conducted by adjoining private landowners would cumulatively minimize the presence and spread of noxious weeds in both the project and surrounding area, but their magnitude and cost cannot be quantified at this time and would be the responsibility of the landowner and as such are beyond the scope of this analysis.

RESPONSE TO COMMENTER ID: 21, 64, 66, 82, 83, 114, 133, 135, 143, 150, 159, 161, 166

GEOLOGY AND SOILS

1. DNRC received 3 comments that generally expressed concerns regarding the impact logging will have to soils within the project area.

DNRC RESPONSE: *DNRC analyzed the effects to forest soils with regard to erosion, displacement compaction, nutrient cycling and soil long-term productivity in the DEIS on pages 103-106. DNRC disclosed both the probability and magnitude of the potential effects to the soil resources as a result of both action and no action alternatives. The ranges of potential impacts are within those recommended by the State Forest Land Management Plan to maintain the long-term productivity of a site.*

RESPONSE TO COMMENTER ID: 16, 54, 66

2. DNRC received 37 comments that generally expressed concerns regarding the impact logging will have on increased erosion within the project area.

DNRC REPONSE: *The erosional potential of the soils with the project area were disclosed on pages 101 and 102 as well as Table S4 in the DEIS. DNRC analyzed the effects of upland erosion to soils on page 105 of the DEIS concluding that a moderate probability of low level impacts from erosion to soil productivity is possible as a result of implementing either action alternative.*

RESPONSE TO COMMENTER ID: 16, 35, 37, 50, 52, 54, 62, 66, 69, 72, 81, 82, 83, 96, 97, 102, 113, 117, 121, 122, 125, 127, 132, 135, 137, 141, 142, 143, 144, 150, 151, 152, 155, 158, 165, 166, 170

3. DNRC received 1 comments that generally expressed concerns regarding the cumulative effect of the proposed actions to the long-term soil productivity within the project area.

DNRC RESPONSE: *DNRC analyzed the effects to forest soils from implementing an action alternative with regard soil long-term productivity in the DEIS on pages 103-104. DNRC concluded that a high probability of low to moderate level effects are expected and that the range of potential impacts are within those recommended by the State Forest Land Management Plan to maintain the long-term productivity of a site.*

RESPONSE TO COMMENTER ID: 16

4. DNRC received 22 comments that generally expressed concerns regarding the potential for the proposed actions to affect slope stability within the project area.

DNRC RESPONSE: *As requested during public scoping, DNRC used the SINMAP model to predict areas within the project area that have the potential for shallow, slope instabilities due to topographic*

convergence accelerating local saturation during storm events. Stability classes considered stable in SINMAP are defined as those above 2. In Table S8 of the DEIS (page 107), 3.1 and 1.2 acres were identified as areas where unmitigated actions could have the potential to experience localized slope instability. As a result of these model outputs and field observations of proposed road locations paired with professional experience, DNRC concluded that the proposed action alternatives present a moderate probability of low to moderate impacts to soil productivity, and potentially water quality, from small, localized slope failures.

RESPONSE TO COMMENTER ID: 16, 54, 62, 66, 72, 74, 101, 106, 107, 116, 127, 132, 133, 137, 139, 141, 144, 150, 151, 152, 155, 168

5. DNRC received 4 comments that generally expressed concerns regarding the potential for the proposed actions to affect soil nutrient pools within project area.

DNRC RESPONSE: *The potential for an action alternative to effect nutrient cycling within the project area were disclosed on pages 104 and 105 in the DEIS concluding that a low probability of low level impacts to site nutrient pools is possible as a result of implementing either action alternative.*

RESPONSE TO COMMENTER ID: 16, 64, 69, 133

6. DNRC received a report titled, "*Soils Review of the Proposed Limestone West Timber Harvest Project T3S R6E Sections, 3,4,9, and 10, Gallatin County*". The author and several other commenters asked why the information contained within this report was not used in the soils effects analysis within DEIS.

DNRC Response: *The report submitted to DNRC contained two parts; one reviewed the project in context of the soils data presented in the 1980 Bear Canyon Management Plan Draft Environmental Impact Statement (DNRC 1980) and the second part reviewed the proposed project in context of soil survey information obtained via the Web Soil Survey (https://websoilsurvey.nrcs.usda.gov/). The follow response will outline how the report was considered during the MEPA process including the significant limitations that a planning level review of model-based soil interpretations presents.*

PART I: Review of the Bear Canyon Management Plan Draft EIS

As stated in the State Forest Land Management Final Environmental Impact Statement (Chapter I, Page 1-4), "The Forest Management Bureau has completed management plans and environmental statements on the Swan River State Forest (1978) and Bear Canyon (1983). ***These area-based management plans would be superseded upon the adoption of the State Forest Land Management Plan(SFLMP).*** *Planning for individual projects will still be required to comply with MEPA and could potentially tier to this programmatic EIS." The Draft Bear Canyon Management Plan was never completed, a record of decision was never published and is superseded by the SFLMP.*

The Bear Canyon Management Plan was a planning level review of the state lands in Bear Canyon area designed to inform managers of potential alternatives for generating revenue from the lands in

question. Site-specific project proposals such as harvest unit layout or road construction locations were never completed. Furthermore, the proposed alternatives were developed in the early 1980's when road construction practices and the equipment used were radically different than today. Best Management Practices had not been developed for forest practices, bull dozers rather than excavators were used to construct roads, streamside protection laws were not yet adopted and yarding systems were predominately tracked bulldozers as opposed to using more expensive skyline yarding systems. The conclusions made in the Bear Canyon Management Plan DEIS need to be considered in context of these consideration and provide little guidance for site specific timber harvest proposals such as the Limestone West timber sale project.

RESPONSE TO COMMENTER ID: 107, 114,127,132,139,141,144,148,150,155,158,159,165

PART II: Soils Review of Proposed Limestone West Timber Harvest Project

All assumptions used for modeled soil interpretation within the Web Soil Survey can be found in the National Forestry Manual published by the Natural Resources Conservation Service (NRCS 1998). This document describes the rating criteria for how soil limitations are estimated, such as "slight", "moderate", or "severe" for a given soil map unit. Below are the thresholds for the various rating criteria in determining soil limitations in context of the submitted report.

1. Construction Limitations of Haul Roads and Log Landings (NRCS 1998, pgs. 537-8 and 537-67)

The primary consideration of this limitation is slope with the following rating criteria:

Factor	Slight	Moderate	Severe
Slope	<15%	15-30%	>30%

Under these modeled constraints in Web Soil Survey, any terrain with a slope over 15% would have a moderate to severe limitation for the construction of haul roads or log lands. If this were the case, road construction in a significant portion of the intermountain west would be limited, which is largely inaccurate.

2. Soil Susceptibility to Compaction

DNRC agrees that a majority of the soils within the project area has a low to moderate risk of compaction as stated in the DEIS (Table S4- Soil Map Unit Descriptions, pg. 107). Some map units have an elevated risk of compaction due to prolonged soil moisture which was also presented in the table referenced above. Considering the information provided in the report, DNRC still concludes that the proposed actions under alternative A or B presents a high probability of low to moderate level impacts to soil physical properties (DEIS pg. 104). DNRC was unable to recreate the soil susceptibility to compaction figure presented in the report using web soil survey.

3. Soil Rutting Hazard (NRCS 1998, pgs. 537-8 and 537-61)

A significant consideration for this NRCS risk criteria is that operations of equipment would occur on forest sites (3-10 passes) when the soil moisture is near field capacity (100%). Operations in such wet conditions (field capacity) would never be allowed by the forest officer and strict contract

requirement of 20% soil moisture would be contractually monitored and enforced. Secondly, this rating assumes year-long water tables ≤30cm. Areas that exhibit such shallow water tables (≤30cm) in the project area are only found adjacent to stream channels or other riparian features that would strictly prohibit equipment operations. Considering the information provided in the report, DNRC still concludes that the proposed actions under alternative A or B presents a high probability of low to moderate level impacts to soil physical properties (DEIS pg. 104).

4. Harvest Equipment Operability (NRCS 1998, pgs. 537-9 and 537-69)

A significant consideration for this NRCS risk criteria assumes harvest activities would disturb from 35 to 75 percent of the surface area with rutting, puddling, or displacement up to a depth of 45cm. It also assumes year-round water tables and year-round pounding. This rating does not assess the soil surface protection provided by slash or operations during frozen or snow-covered soils. Most all the soil mitigation measures listed in the Stipulations and Specification section of the DEIS (pg. 295) would prevent any of these assumptions from occurring.

Secondly, harvest suitability automatically classed as poorly suited for any slope over 35%. Modern ground-based harvest equipment can feasibility operate on slopes up to 45% with acceptable soil disturbance (DNRC 2009, DNRC 2011).

Considering the limitations of how the risk criteria is assumed by the NRCS, DNRC agrees with the author of the report that concerns should be reviewed on the ground as was done for the development of the project. During field review, as is common, some areas within harvest units were found to be too steep for equipment operations and will have equipment restriction zones (ERZs) identifying them. A breakdown of slope classes within the project area and by alternative was presented in Table S3- Slope Class Distribution (DEIS pg. 100). Under Alternative B, the ground-based alternative, approximately 8% of the harvest units (29 acres) would require ERZ's. DNRC still concludes that the ground-based harvest units proposed for harvest are suitable for operations with proper mitigation and that the proposed actions under alternative A or B presents a high probability of low to moderate level impacts to soil physical properties (DEIS pg. 104).

5. Erosion Hazard (Off-Road, Off-Trail) (NRCS 1998, pgs. 537-6 and 537-59)

DNRC agrees that a large majority of both alternatives have a moderate risk of erosion as summarized in Table S4- Soil Map Unit Descriptions (DEIS pg. 107). The FEIS also forecasts that 11%(66.4 acres) to 12.9% (48.4 acres) of land would have detrimental soil disturbance within harvest units. Standard BMP's on primary skids trails and line corridors can provide the necessary mitigation for erosion control on these areas. As a result, the DEIS concludes a moderate probability of low level impacts to soil productivity resulting from surface soil erosion.

6. Erosion Hazard (Road, Trail) and Suitability for Roads (Natural Surface) (NRCS 1998, pgs. 537-6, 537-8, 537-57, 537-63)

Modeled risk criteria for both erosion hazard and suitability of roads relies heavily on slope to calculate the hazard. For erosion risk on roads, a severe rating is given for road slopes greater than 15%. DNRC standards for road construction gradients are 0 to 8%. Modeled risk criteria derived

from the Web Soil Survey only considers hillslope gradients from a digital elevation model, thus most all roads in the project area would have slopes over 15%, which would inaccurately qualify erosion risk. Considering DNRC's designed standards for forest road construction (0-8%) within the context of the Web Soil Survey risk matrix (NRC 1998, pg. 537-57), erosion from all roads in the project area would have risk criteria of slight to moderate. This is consistent with effects conclusion of the DEIS (pg. 117) which states a high probability of moderate direct and indirect effects from sediment delivery in Limestone Creek and a low probability of low level effects from sediment delivery in Nichols Creek.

The modeled risk criteria for road suitability assumes roads would be constructed in a natural setting ***without*** *cut and fill construction on slopes less than 20 percent gradient. This is a very significant assumption that directly conflicts with the low-volume, balanced road construction practices proposed in the project area. With this modeled assumption (NRCS 1998, pg. 537-63), the following risk criteria would be modeled based on the hillslope the map unit is on:*

Factor	Well Suited	Moderately Suited	Poorly Suited
Slope	<6%	6-12%	>12%

All soil map units in the project area are found on slopes >12% (DEIS pg. 107) thus the modeled rating of "poorly suited" for 100% of the roads in the project area. In reality, cut and fill construction practices will be used on all new road construction thus making this modeled risk criteria inappropriate to apply to the proposed project.

7. Cutting Unit Slope

DNRC disclosed the ranges of hillslope values (%) within both the project area and alternatives in the DEIS (Page 100, Table S3 – Slope Class Distribution). Harvest units with slopes generally over 45% will be harvested using cable harvest systems while slopes generally under 45% will use ground-based systems. Localized areas within tractor harvest units that exceed 45% will have equipment restriction zones and equipment operations will be prohibited.

7. DNRC received a comment suggesting a more in-depth description of the regional geologic setting that comprises the Limestone West project area.

DNRC Response: *Thank you for your comment. DNRC has modified the Geology and Soils sections to better describe and highlight the geologic setting of the project area. These changes can be found on page 99 of the FEIS.*

RESPONSE TO COMMENTER ID: 3

WATERSHED AND FISHERIES

1. DNRC received 24 comments that generally expressed concerns regarding timber harvesting and related activities, such as road construction, can lead to water-quality impacts by increasing the production and delivery of fine sediment to streams.

DNRC RESPONSE: *The analysis of sediment delivery to streams consisted of a sediment-source inventory. Stream crossings and roads within 100 feet of a stream, both existing and proposed, were evaluated using the Washington Road Surface Erosion Model to determine existing and potential sources of introduced sediment to stream channels (Dubé et al., 2004). The Washington Road Surface Erosion Model is a tool that allows users to calculate average annual road surface erosion and sediment delivery to channels in a standardized manner. Potential sediment delivery from harvest units was evaluated from a risk assessment of potential upland sediment sources, which considers stream buffer effectiveness. This risk assessment used the soil information provided in the GEOLOGY AND SOILS ANALYSIS and the results from soil monitoring on past DNRC timber sales (DNRC 2009, DNRC 2011).*

As a result of these methods and the proposed actions associated with action alternatives A and B, it was concluded that a moderate probability of low level effects of upland erosion from timber harvesting coupled with the increased sediment delivery from new road construction and crossing structure installation results in a high probability of moderate direct and indirect effects to sediment delivery in Limestone Creek resulting from the implementation of Action Alternative A or B. There is a low probability of low level effects from sediment delivery in Nichols Creek resulting from the implementation of Action Alternative A or B. Downstream beneficial uses will continue to be supported. Water right and downstream water resources (ponds, wetlands, etc.) will not have measurable or detectable changes in water quality.

A map of proposed new stream crossing locations is presented in the proposed decision in Chapter 2 of the FEIS (page 74).

RESPONSE TO COMMENTER ID: 31, 34, 50, 52, 62, 69, 81, 8, 102, 113, 121, 127, 132, 133, 136, 141, 142, 144, 150, 151, 155, 158, 164, 165

2. DNRC received 8 comments that generally expressed concerns regarding timber harvesting and associated activities can affect the timing, magnitude, and volume of water runoff in a harvested watershed.

DNRC RESPONSE: *The annual water-yield increase for watersheds in the project area was estimated using the Equivalent Clearcut Area (ECA) method as outlined in Forest Hydrology, Part II (Haupt et al, 1976). ECA is a function of the total area in a watershed comprised of roads and harvested or burned areas; percent of crown removed during harvesting or wildfire; and amount of vegetative recovery that*

has occurred since the harvest or natural disturbance. As live trees are removed, the water that would have evaporated and transpired either saturates the soil or is translated to runoff. This method also estimates the recovery of these increases as new trees revegetate the site and move toward preharvest water use. ECA method for forecasting potential water yield increases as a result of forest vegetation manipulation is commonly used method that is rooted in fundamental concepts on watershed hydrology.

Water yield increases and a narrative description of potential impacts to runoff timing and magnitude were described on page 118 of the DEIS. It was concluded that a moderate probability of low level direct and indirect effects to both watershed analysis areas was expected if action alternative A or B was implemented.

The level of harvest proposed is well below those levels normally associated with detrimental increases in water yield (Hibbert 1966, Bosch and Hewlett 1982 and Stednick 1996). Numerous studies have found that that about 20 to 30% of a watershed has to be harvested in order for a detectable increases in water yield to occur (Hubbart 2007). The general conclusion is that approximately 20% of the basal area of vegetation within a watershed must be removed before a statistically significant change in annual runoff can be detected (Elliot 2010). In addition, this amount of forest canopy removal is likely within the natural range of variability considering historic insect and disease outbreaks and wildfire disturbances.

RESPONSE TO COMMENTER ID: 37, 64, 66, 102, 116, 127, 132, 151

3. DNRC received 1 comment that generally expressed concerns regarding project activities may affect fish habitat by modifying channel form and function.

DNRC RESPONSE: *Considering the combined potential effects of sediment delivery and water yield increases within both watershed analysis areas, channel form and function processes would continue to be maintained with a low probability of low level direct or indirect effects. Both sediment and water yields would continue to be within the natural range of variability that these channels evolved with thus presenting a low level of risk to channel stability and downstream fish habitats.*

RESPONSE TO COMMENTER ID: 147

4. DNRC received a comment regarding the slope stability analysis that concluded DNRC is not implementing avoidance of potentially unstable slopes.

DNRC RESOPONCE: *The commenter incorrectly identified potentially unstable SINMAP slope classes as Class 3 and 4 categories. The DEIS identifies, as supported by SINMAP, stability classes over 2 as stable (DEIS page 100). The commenter also is in error by comparing watershed analysis area and action alternative area percentages. These are two very different spatial scales. As presented in the DEIS (Page 100, Table S3), potential unstable areas (Class 1-2) in the watershed analysis area totals 1.4% or 45.1 acres of the total 3,132 acre analysis area. Comparatively, action alternative A and B propose activities on 3.1 and 1.2 acres of stability class 1 and 2 lands, respectively. This clearly demonstrates that DNRC minimized harvest units and road location on the most unstable locations in the watershed.*

RESPONSE TO COMMENTER ID: 79, 114

5. DNRC received a comment regarding US Army Corps of Engineers and permit requirements.

DNRC RESOPONSE: *This project is exempt from the Nationwide Permit under exemption 404(f)(1)(E) of the Clean Water Act. The National Wetland Inventory was used during project development and design. A map of the water resources within the project area is contained on page 121 of the DEIS.*

RESPONSE TO COMMENTER ID: 79, 114

6. DNRC received a comment noting the reference citied for the sediment delivery calculations used in the DEIS.

DNRC RESPONSE: *The citation included in the DEIS was in error. DNRC used the Washington Road Surface Erosion Model to calculate introduced sediment at existing and new stream crossings (Class I, II and III streams). This citation was corrected in the FEIS.*

RESPONSE TO COMMENTER ID: 79, 114

7. DNRC received a comment regarding the monitoring of stream crossing structures and road prisms.

DNRC RESOPONSE: *A DNRC timber sale administrator will be on-site during road construction and timber harvesting activities most days of each operational week. Timber sale inspection reports will be used to document and communicate any deficiencies to the purchaser and hold them accountable for corrective actions, if necessary. DNRC will evaluate BMP application and effectiveness throughout the administration of the timber sale. The project hydrologist will be onsite for perennial culvert or bridge installations to ensure 124 permit compliance and BMP effectiveness. DNRC has also committed to continue turbidity monitoring downstream of project activities both during and after project completion.*

RESPONSE TO COMMENTER ID: 79, 114

8. DNRC received comments regarding planned harvest treatments with Streamside Management Zones and Riparian Management Zones.

DNRC RESPONSE: *All rules and regulations pertaining to the Streamside Management Zone (SMZ) Law will be implemented and strictly enforced by the Forest Officer. An SMZ width of 100 feet is required on Class I and II streams when the slope is greater than 35 percent. An SMZ width of 50 feet is required when the slope is less than 35 percent. Harvest will be allowed within Class II and III streams with requirements of 50% retention of trees greater than 8 inches in diameter or 10 trees per 100 feet, whichever is greater.*

All Class I, perennial streams will have a minimum 100-foot RMZ buffer applied. Under this HCP commitment, the total combined width of the SMZ and RMZ will equal one site potential tree height (SPTH) which for the Limestone West project area is 100 feet. No harvest will be allowed in Class I SMZ or RMZ's.

RESPONSE TO COMMENTER ID: 66, 79, 114

WILDLIFE

In this section, comments received on the project pertaining to wildlife are addressed. The majority of comments received are addressed on the first 27 pages. DNRC provided additional detailed comments on two letters received: 1) from the Native Ecosystems Council and Alliance for the Wild Rockies dated October 23, 2018 (pp. 46 to 73), and 2) from Montana Ecosystems Defense Council and Alliance for the Wild Rockies dated October 24, 2018. (pp. 73 to 84.).

1. DNRC received 32 comments that generally expressed concerns regarding the road system established for this project would appreciably increase recreational use of the project area, which could disturb and displace wildlife.

Several commenters indicated that they believed the wildlife analysis to be inadequate for sensitive species and other species not listed. (14, 82, 83, 110)

DNRC RESPONSE: *We understand that some members of the public are concerned about the amount of new roads proposed under Alternatives A and B and are taking that into careful consideration. The locations of existing and proposed roads in the project area were provided in Figures II-1 and II-2 on pages 17 and 18 of the DEIS. DNRC also must responsibly consider infrastructure needs that would improve access for long-term future management of the area and increase access for potential fire suppression activities (DEIS p. 2). Proposed new permanent roads would be gated and would not be left open for motorized access. Many roads needed for the project would be reclaimed following use. Many other mitigations and requirements to minimize adverse effects to wildlife would also be in place that are listed in the stipulations and specifications section of the analysis (DEIS pp. 294-300). DNRC provided a detailed analysis of potential road effects on wildlife including security and habitat fragmentation in the DEIS (pp. 127 to 137, pp. 147 to 164, pp. 174 to 186, pp. 192 to 202, pp. 205 to 227), and described how amounts and densities would change under Alternatives A and B in the analysis of effects on grizzly bears (DEIS, p. 175 Table W-5, and p. 179 Table W-6). Under Alternative A, which has the greatest amount of new, permanent restricted road proposed at 5.3 miles, approximately 9.6 acres would be compromised for future timber production. However, with no road infrastructure, timber value could not be realized because trees could not be economically accessed for removal and sale. We believe the analysis is an accurate, objective and adequate portrayal of impacts to species of concern in the vicinity of the Limestone West Project Area.*

RESPONSE TO COMMENTER ID: 5, 14, 35, 37, 44, 49, 50, 52, 55, 58, 61, 65, 66, 69, 71, 72, 74, 82, 83, 95, 110, 113, 116, 133, 138, 140, 144, 150, 152, 155, 156, 159

2. DNRC received 20 comments that generally expressed concerns regarding the road system established for this project would allow appreciable increases recreational use of the project area and adversely affect the ability of wildlife (particularly elk and moose) to use and move through the area.

DNRC RESPONSE: *This issue was addressed in detail for various wildlife species that occur on the project area on pages 154 to 164 of the DEIS. Specific issues related to road-related disturbance to moose were addressed on pages 190 to 202 of the DEIS. Project related effects on the movement of elk and deer in winter were disclosed on pages 214 to 221 of the DEIS. Following logging, forest patches on the project area and across the broader cumulative effects analysis area would continue to have variable tree density and would continue to provide a mosaic of habitat conditions. Mature forest stands in the cumulative effects analysis area would generally remain well connected and provide a suitable network of cover capable of facilitating movements of wintering animals across the broader landscape. In the analysis on pages 192 to 202 we acknowledge that winter habitat conditions will be altered and moose may be displaced, but given the mosaic of habitat conditions that would remain following logging and the ability of moose to use a broad range of habitats, we believe it is accurate to state near-term habitat quality would be reduced, but habitat would not be removed or lost in equal proportion to the acreages treated. We would expect moose to be able to utilize and cross clearcut openings during portions of each early and late winter period, and we would expect energetic expenditures (particularly for calves) to increase when snow depths are >65 cm (~26 in.) (Thompson and Vukelich 1981, in Poole-Smith et al. 2004). Given the availability of interspersed cover patches that would be retained following logging, moose should be able to access areas of low, moderate and high canopy cover during most of each winter. We are unaware of any suggested guidelines for minimum cover patch sizes needed by moose. In the 33,422-acre cumulative effects analysis area dense overstory cover with >60% canopy would remain on 22,221 acres (66% of the cumulative effects analysis area) following logging under the alternative with the greatest number of acres treated (Alternative A). Natural openings were historically abundant on the landscapes and vistas surrounding the city of Bozeman (Gruell 1983:91-94) and many are present today that moose periodically utilize and/or negotiate. We would not anticipate any appreciable decline in the numbers of moose currently wintering in the project area vicinity under either timber sale alternative.*

RESPONSE TO COMMENTER ID: 5, 14, 19, 44, 58, 61, 62, 66, 72, 74, 78, 81, 89, 110, 116, 132, 133, 140, 150, 156, 162

3. DNRC received 54 comments that generally expressed concerns regarding the removal of trees and the road system established for this project and cumulative effects associated with other projects in this roadless area would fragment and adversely affect wildlife habitat and movement corridors for elk, deer, bears, moose, birds and other species (particularly associated with the Gallatin Bridger Big Belt Wildlife Corridor) in one of the last pieces of habitat relatively undisturbed by people in this section of the Gallatin Valley.

DNRC RESPONSE: *The Gallatin Bridger Big Belt Corridor mentioned was addressed in detail in the DEIS on pp. 127 to 138. Impacts were considered and analyzed at the scale of the smaller 2,725-acre*

project area, as well as the broader 33,422-acre cumulative effects analysis area. All habitat altering projects that we were aware of regardless of their size were considered in the larger cumulative effects analysis area as required under MEPA. Mature forested habitat patches would be fragmented and human use of proposed permanent restricted roads could displace wildlife in the project area for decades (DEIS p. 130, 132, and 134 to 137). To be clear, we believe there would be some adverse effects to some species as described in the DEIS, but we believe it is also important to accurately disclose and consider the many other influences on corridors and linkage for wildlife such as highways, open roads, railroads, road density, human site development, hiding cover and presence of riparian areas (Hilty et al. 2006, USFS 2005, Servheen et al. 2003, Craighead et al. 2001) (See DEIS p. 128). A monitoring study conducted by Craighead et al. from 2001 to 2009 (MDT 2010) on the 21-mile stretch of Interstate 90 between Bozeman and Livingston, MT documented >10,000 vehicle passes daily and nearly 2,000 wildlife mortalities of numerous species within the 2001 to 2009 period. The authors also noted that the presence of I-90 was the most significant barrier to wildlife movement in the area and in the region (MDT 2010). We believe the analysis contained in the DEIS accurately discloses the likely anticipated direct, indirect and cumulative effects to wildlife that would occur as a result of the alternatives considered, and we used the best available information and professional judgement to accurately and objectively disclose anticipated effects. We believe we provided an appropriate analysis of the impacts of the proposed alternatives at the appropriate scales as required under MEPA on wildlife and habitat.

RESPONSE TO COMMENTER ID: 5, 6, 14, 19, 31, 33, 34, 41, 44, 45, 55, 61, 62, 64, 66, 69, 74, 78, 84, 87, 89, 103, 109, 110, 113, 116, 117, 121, 122, 125, 132, 133, 135, 136, 137, 140, 141, 143, 144, 150, 151, 152, 153, 155, 157, 158, 164, 165, 166, 167, 168, 169, 170, 171

4. DNRC received 5 comments that generally expressed concerns regarding the proposed removal of trees and construction of roads may adversely affect listed endangered, threatened and sensitive wildlife species and the analyses in the DEIS are not adequate to comply with ESA and MEPA. Several commenters expressed concerns about the effects and adequacy of the analysis for grizzly bears, Canada lynx and wolverines.

DNRC RESPONSE: *We believe the grizzly bear analysis contained on pages 172-181, the lynx analysis on pages 164 to 172, the wolverine analysis on pages 181-186, and the analysis for sensitive species DNRC deemed relevant for consideration on pages 187-190 of the DEIS are transparent, factual, and accurate and fully comply with MEPA. DNRC currently manages for grizzly bears and Canada lynx under the Forest Management Habitat Conservation Plan (HCP), which addresses conservation concerns associated with Endangered Species Act (ESA). As a part of all proposed action alternatives, DNRC would implement all applicable HCP measures designed to minimize and mitigate adverse effects to grizzly bears and lynx, and as such, would be if full compliance with applicable requirements under Section 10 of the ESA.*

Take was extensively addressed in the HCP FEIS (DNRC 2010, Vols. 1 and 2) and the supporting biological opinion. Revisiting this analysis was considered beyond the scope of this DEIS. We refer interested readers to the following sites for complete information.

http://dnrc.mt.gov/divisions/trust/docs/forest-management/hcp/eis/volumei/volumei.pdf

http://dnrc.mt.gov/divisions/trust/docs/forest-management/hcp/eis/volumeii/volume2.pdf

https://www.fws.gov/montanafieldoffice/Endangered_Species/Habitat_Conservation_Plans/DNRC_HCP.html

Applicable HCP measures, as well as administrative rule (ARM) requirements applicable to this project were contained in the Stipulations and Specifications section of the DEIS located on pp. 295-300.

DNRC provided a detailed analysis for wolverines regarding the likely effects of the Limestone Timber Sale proposal including logging, road construction, and associate public recreational use on pp. 181 to 186 of the DEIS. The assessment of low effects was influenced by three key factors: 1) at the landscape scale, the types and presence of forests and other vegetation do not appear to define wolverine habitat as much as the presence of abundant food supplies (i.e., ungulate carrion) and sparsely inhabited wilderness areas that contain persistent snow until late spring (Kelsall 1981; Banci 1994; Aubry et al. 2007; DEIS p. 182), 2) wolverines are a medium-sized carnivore that is an opportunistic scavenger in the winter and opportunistic omnivore in summer, consuming prey that includes snowshoe hares, marmots, ground squirrels, red squirrels, salmon, porcupine, mice, voles, and berries, and 3) wolverine home ranges in Montana are approximately 150 square miles (Hornocker and Hash 1981). Given the very large home range sizes of wolverines and the numerous species of small mammals they utilize as prey, forest cover removal from 373 to 601 acres on the outskirts of an occupied wolverine territory would be inconsequential. Please see the numbered rationale used for the specific effects determinations made regarding wolverine on pp. 184 and 186 of the DEIS.

RESPONSE TO COMMENTER ID: 5, 14, 110, 133, 159

5. DNRC received 13 comments that generally expressed concerns regarding increases in roads and long-term non-motorized recreational use associated with them will cause disturbance and displacement of wildlife that use the area and adversely impact habitat connectivity and important linkage areas.

DNRC RESPONSE: *We understand that some members of the public are concerned about the amount of new roads proposed under Alternatives A and B and are taking that into careful consideration. DNRC addressed this issue specifically on pages 154 to 164 of the DEIS. The analysis of both timber sale alternatives generally concluded that total road amounts would increase from 4.3 miles to up to 9.6 miles in the project area; 2) these roads could facilitate increases in recreation and affect security on approximately 1,980 acres (72.7% of the 2,725-acre project area); 3) road effects would occur in addition to similar effects associated with cover removal on up to 601 acres; 4) new roads are likely to be used by the public and recreational use is likely to increase; 5) disturbance and displacement of wildlife could be expected for several decades; 6) conifer regeneration in 2 to 4 decades would likely ameliorate some of the displacement effects; 7) the routes selected by users and intensity of recreation into the future are uncertain; 8) disturbance and displacement effects are expected to primarily be confined to the lands within the project area, however some displacement could occur onto National Forest lands neighboring*

the project area; 9) nighttime use of the project area by wildlife is expected to be minimally affected; and 10) impeded travel by wildlife across or through affected lands in the project area would not be expected – particularly for species that travel and forage at night. Thus, we would anticipate activities would result in a moderate to high level of displacement potential due the increase in new permanent, restricted roads and associated indirect increases in recreational uses during all seasons.

DNRC also must responsibly consider infrastructure needs that would improve access for long-term future management of the area and increase access for potential fire suppression activities (DEIS p. 2). DNRC provided a detailed analysis of additional potential road effects on wildlife including security and habitat fragmentation in the DEIS (pp. 127 to 137, pp. 147 to 164, pp. 174 to 186, pp. 192 to 202, pp. 205 to 227), and described how amounts and densities would change under Alternatives A and B in the analysis of effects on grizzly bears (DEIS, p. 175 Table W-5, and p. 179 Table W-6).

RESPONSE TO COMMENTER ID: 14, 19, 44, 62, 66, 74, 110, 133, 140, 150, 152, 156, 165

6. DNRC received 4 comments that generally expressed concerns regarding that proposed logging would reduce snags and coarse woody debris, which could adversely affect species that depend on these habitat attributes. DNRC's snag management strategy is inadequate for species such as the black-backed and northern three-toed woodpecker and other species.

DNRC RESPONSE: *DNRC's strategy for management of snags and coarse woody debris aims to ensure that legacy snags and downed logs remain in logged areas to ensure that habitat attributes and site productivity are maintained for decades to come. While DNRC attempts to reduce revenue loss by emphasizing retention of large cull trees and snags for habitat purposes, large, live trees retained are often sound and have economic value that instead gets dedicated to maintenance of biodiversity and protection for snag-associated species. Recruitment tree constraints are also considered in DNRC calculation of sustainable yield. DNRC acknowledges that logging cannot completely emulate snag densities and legacy material resulting from natural disturbances such as fire, and economically remove wood fiber. DNRC also acknowledged in the DEIS that available snag habitat would be reduced on all treated acres in the project area, which would be expected to reduce the local abundance of species that require snags as a life requisite in proportion to the acreage and numbers affected (DEIS pp. 140, 141, 142, 143). The effects to snag and downed log abundance and associated effects to wildlife are described in detail on pages 36, 37, 91, 138 to 144 of the DEIS and mitigations are stated on page 227.*

DNRC acknowledges that these two woodpecker species require snags in greater abundance than the minimum number of large snags and recruitment trees DNRC retains to maintain legacy material on the landscape. DNRC specifically addresses habitat for these two fire-associated species through implementation of administrative rule ARM 36.11.438, which is applied in conjunction with wildfire events and salvage logging. This rule requires that at least 10% of burned acreage broadly representative of the burn and stand conditions is retained unharvested with special consideration provided for black-backed woodpecker habitat. DNRC defines black-backed woodpecker habitat as …"fire-killed stands of

trees greater than 40 acres, less than five years since disturbance, and with greater than 40 trees per acre that are greater than or equal to nine inches DBH. In fire salvage situations, DNRC also retains all sub-merchantable burned trees standing where soil, slope stabilization and human safety allow, which are valuable as feeding substrate. Given the high level of ongoing insect infestations in the forests of western Montana, and that an average of 501,000 acres have burned annually in U.S. Forest Service Region 1 during the last decade – over 5 million acres total (Morgan 2017), habitat availability at the present time is likely not limited or limiting for these species.

RESPONSE TO COMMENTER ID: 14, 64, 74, 133

7. DNRC received 13 comments that generally expressed concerns regarding increases in roads, logging disturbance, cover loss, and long-term non-motorized recreational use associated with new restricted roads will reduce security for elk, increase vulnerability, and lower habitat effectiveness, resulting in displacement of elk to neighboring agricultural lands, which could increase game damage conflicts in the local area.

Comments received from Montana Fish, Wildlife and Parks (MFWP) re-iterated concerns regarding the potential for additional displacement of elk onto private lands and resultant property damage. MFWP also suggested consideration of additional new information (Ranglack et al. 2017) and (Wisdom et al. 2018) that have relevance to this project. MFWP requested further consideration of eliminating or reclaiming any roads possible, particularly those that would extent into section 9 and those in the vicinity of the Triple Tree Trail.

DNRC RESPONSE: *DNRC addressed elk security and bull elk vulnerability on pp. 202 to 214 in the DEIS. DNRC examined security at the two appropriate scales of analysis; the 2,725-acre project area and a larger 93,552-acre cumulative effects analysis area that included the full 6,400-acre DNRC block with all roads and older timber cutting units accounted for. The 93,552-acre analysis area was selected as it approximates the size of an elk herd home range during the fall general hunting season (DEIS p. 204) as recommended by Hillis et al. (1991). The 6,400-acre full block of DNRC lands makes up 7% of the elk security analysis area (DEIS p. 204, Table W-7). Bull elk vulnerability was specifically addressed on pages 202, 203, 210, and 213 of the DEIS.*

DNRC reviewed Ranglack et al. (2017) and Wisdom et al. (2018) provided by MFWP. Elk security results using the methods of Ranglack et al. (2017) using metrics specific to both rifle and archery hunting seasons resulted in greatly reduced existing security blocks within the 93,552-acre security analysis area. As no new roads open to public motorized uses would be constructed as a part of any alternatives considered, security using this method was further reduced by cover removals on 371 acres under Alternative A and 284 acres under Alternative B. Alternative C would not affect security habitat. Due to the high inherent amount of open roads in the vicinity of the elk security analysis area, security patches that meet the minimum criteria established by Ranglack et al. (2017) are few in number in the analysis area. Wisdom et al. (2018) found that distances between elk and recreationists were highest during ATV riding, lowest and similar during hiking and horseback riding, and intermediate during mountain biking. Their results supported the hypothesis that elk avoid trail-based recreation similarly to

their avoidance of roads open to motorized traffic on public forests. DNRC is further evaluating requests to eliminate and reclaim roads in the project area.

RESPONSE TO COMMENTER ID: 14, 65, 66, 78, 103, 110, 113, 140, 141, 152, 156, 159, 161

8. DNRC received 9 comments that generally expressed concerns regarding increases in roads, logging disturbance, cover loss, and long-term non-motorized recreational use associated with new restricted roads will reduce habitat suitability and security for moose resulting in their displacement and/or carrying capacity.

One commenter suggested that DNRC intentionally avoided mentioning that the Limestone West Timber Sale Project will exacerbate ongoing population declines in this landscape, that old growth forest is critical for moose, and that more recent updates on causes of moose mortality in the Big Hole Study Area that could reflect declines in the Gallatin landscape.

DNRC RESPONSE: *Moose are considered a big game species in Montana and the project area lies within DFWP Hunting District 315-50 (the Bear Canyon-Trail Creek Hunting District). Two licenses for antlered bull moose are issued annually. We believe the analysis pertaining to moose in the DEIS contained on pp. 190-202 adequately and objectively describes the expected effects we believe could occur to moose, particularly those in winter. Anticipated project-related effects on wintering moose are addressed on virtually every page found in this section of the analysis (i.e., all of pp. 190 to 202). Given: 1.) that moose have the ability to tolerate deep snow conditions (Jenkins and Wright 1988, Langley 1993) 2.) that moose may utilize abundant browse forage species and other remaining dense forest habitat patches found in the project area and cumulative effects analysis area, 3.) that moose have large home ranges (approximately 50 sq. miles) and can exploit habitat opportunities across forested landscapes with varying degrees of canopy cover (Langley 1993, Poole and Stuart-Smith 2004:25), we would not expect measurable reductions in long-term winter range carrying capacity for moose. However, several individual moose may be displaced periodically as a result of increases in the presence of human recreational use in winter, and some long-term displacement would be possible (DEIS p.194).*

Moose are capable of using a broad range of habitat conditions throughout the year. Moose may also seek out heavy forest cover under harsh winter conditions, however, they can meet their life requisites in mid-aged to mature forest stands that provide ample security, cover, and forage. Moose do not require an abundance of dead snags, coarse woody debris, abundant very large old trees and decadence characteristic of old growth forests (Green et al. 1992) to meet their life requisites.

On page 190 of the DEIS DNRC referenced the most recent annual progress report pertaining to the 10-year moose study being conducted by DFWP. During the first three years of the study, the Big Hole area has experienced relatively high mortality due to disease or health-related causes and further research is needed to better understand the causes and consequences of the mortality (DeCesare and Newby 2017:9). The cause and extent of the declines in the Gallatin landscape is uncertain and conclusive results are not yet available. The 10-year study is still in early stages of data collection and analysis. Additional

information regarding the study may be found at the following link http://fwp.mt.gov/fishAndWildlife/diseasesAndResearch/research/moose/populationsMonitoring/default.html.

RESPONSE TO COMMENTER ID: 14, 44, 65, 78, 103, 113, 133, 141, 156, 159

9. DNRC received 12 comments that generally expressed concerns regarding alteration of vegetation, disturbance caused by logging could reduce the abundance and diversity of birds and other wildlife species.

DNRC RESPONSE: *This issue was addressed on pages 144 to 154 of the DEIS. DNRC provides for the general habitat needs for species that are not federally listed or sensitive to forest management activities under the coarse filter approach of the State Forest Land Management Plan and Forest Management Rules (SLFMP ROD p.ROD-2). The analysis in the DEIS generally concluded that given: 1) the sizable amounts of moderate to dense mature stands that would remain following harvest (at least 1,724 acres with >40% canopy cover), 2) the mosaic of habitat conditions that would remain following harvest, 3) that there would be no long-term increases in motorized access associated with the project, 4) an additional uncertain level of increase in non-motorized recreation and long-term disturbance would be possible on up to 5.3 miles of new restricted roads, 5) cover associated with riparian habitats would be retained, 6) and forest age class and structural diversity would be increased over the next several decades -- we would expect the abundance of species sensitive to humans and forest cover reduction to decrease, while species less sensitive to human activity and those that prefer forest openings and more park-like stand conditions to increase. These changes, however, would be expected to occur on a scale of approximately 1 to 2 square miles. Minimal change in the observed diversity of wildlife would be expected in the project area following the completion of harvest activities.*

RESPONSE TO COMMENTER ID: 14, 70, 74, 78, 80, 82, 83, 133, 140, 141, 150, 155, 159

10. DNRC received 8 comments that generally expressed concerns regarding activities proposed in this project may create disturbance, increase road amounts, and reduce forest thermal and hiding cover, which could adversely affect wintering elk, mule deer, and white-tailed deer.

DNRC RESPONSE: *Changes in the amounts of cover for hiding, security and thermal protection and the related effects of anticipated changes under the proposed action alternatives were addressed in detail in the DEIS on pages 214 to 222. The analysis generally concluded that given that: 1) winter cover would be reduced on up to 601 acres, 2) at least 1,724 acres (63% of project area) would remain in mature forest cover with >40% overstory canopy closure, 3) at least 1,450 would possess >60% overstory cover (53% of project area), which would provide quality thermal cover and snow intercept cover, 4) motorized disturbance associated with logging while the project is operational could disturb and displace elk and deer during stressful winter conditions, 5) up to 5.3 miles of new permanent restricted road would be constructed, 6) new roads would likely receive winter recreational use causing displacement of wintering elk and deer in the long-term, 7) the extent of the disturbance is uncertain, 8) no open roads would be*

constructed, -- short term and long term moderate adverse direct and indirect effects to winter habitat and wintering elk, mule deer and white-tailed deer would be anticipated. Reductions in winter cover on up to 601 acres would be expected to proportionally reduce local winter carrying capacity, particularly stands at lower elevations where wintering cervids concentrate on winter range and new restricted roads would have an uncertain, but potentially lasting adverse disturbance effect.

RESPONSE TO COMMENTER ID: 14, 65, 66, 74, 103, 132, 133, 140

11. DNRC received 1 comment that generally expressed concerns regarding the presence of roads and loss of cover associated with logging could adversely affect elk calving areas on the project area.

DNRC RESPONSE: *DNRC addressed habitat-related concerns involving elk calving areas on pages 222 to 227 in the DEIS. DNRC generally concluded in this analysis that mature forest stands in the project area would remain moderately connected and provide a network of cover suitable for providing calving sites. Within harvested stands, retained patches would continue to provide some escape cover and visual screening. Cover would be sparse on 371 acres proposed for clearcutting. Disturbance risk associated with project activities would be relatively low as motorized logging activity would be restricted from April 1 to June 15 each during each year of operations. There would be minor short-term added risk of disturbance and displacement of pregnant cow elk in late spring that could result in minor adverse effects associated with logging operations, short-term road construction, and road use that could occur after the June 15 activity restriction date when some individual cows with young could still be in the area. However, minor long-term additional disturbance and displacement impacts to elk in spring habitat and calving areas due to increased recreational use on permanent restricted roads in the project area would be expected.*

RESPONSE TO COMMENTER ID: 65

12. DNRC received 26 comments that generally expressed concerns regarding habitat within the Gallatin Bridger Big Belt Wildlife Corridor will suffer degradation and lowered effectiveness due to removal of trees and new roads as a part of proposed logging.

DNRC RESPONSE: *The Gallatin Bridger Big Belt Corridor mentioned was addressed in detail in the DEIS on pp. 127 to 138. Impacts were considered and analyzed at the scale of the smaller 2,725-acre project area, as well as the broader 33,422-acre cumulative effects analysis area. All habitat altering projects that we were aware of regardless of their size were considered in the larger cumulative effects analysis area as required under MEPA. Mature forested habitat patches would be fragmented and human use of proposed permanent restricted roads could displace wildlife in the project area for decades (DEIS p. 130, 132, and 134 to 137). We believe there would be some adverse effects to some species as described in the DEIS, but we believe it is also important to accurately disclose and consider the many other influences on corridors and linkage for wildlife such as highways, open roads, railroads, road density, human site development, hiding cover and presence of riparian areas (Hilty et al. 2006, USFS 2005, Servheen et al. 2003, Craighead et al. 2001) (See DEIS p. 128). A monitoring study conducted by*

Craighead et al. from 2001 to 2009 (MDT 2010) on the 21-mile stretch of Interstate 90 between Bozeman and Livingston, MT documented >10,000 vehicle passes daily and nearly 2,000 wildlife mortalities of numerous species within the 2001 to 2009 period. The authors also noted that the presence of I-90 was the most significant barrier to wildlife movement in the area and in the region (MDT 2010). We believe the analysis contained in the DEIS accurately discloses the likely anticipated direct, indirect and cumulative effects to wildlife that would occur as a result of the alternatives considered, and we used the best available information and professional judgement to accurately and objectively disclose anticipated effects, as required under MEPA.

RESPONSE TO COMMENTER ID: 6, 14, 19, 41, 45, 52, 64, 81, 89, 109, 110, 113, 126, 127, 132, 135, 137, 140, 141, 142, 144, 148, 151, 152, 162, 166

13. DNRC received 5 comments that expressed concerns about how DNRC was managing for biodiversity, given the proposed treatments and wildlife impacts.

Two commenters suggested that DNRC is not managing for biodiversity because no habitat protections are in place for the northern goshawk or great gray owl. They also questioned how the nest sites would be detected without surveys and stated that logging nesting areas will destroy them. Logging will destroy foraging habitat for goshawks.

DNRC RESPONSE: *The State Forest Land Management Plan (SFLMP), Forest Management ARMs, and HCP for forested State Trust Lands provide extensive programmatic analyses and the policy framework for how DNRC conducts forest management activities manages for biodiversity (DNRC 1996, ARMs 36.11.401 to 36.11.471, DNRC 2012). Management of forested state trust lands incorporates both coarse and fine filter approaches and emulation of natural disturbance patterns and processes consistent with those species evolved with in Montana. It is important to note that both natural and man-caused disturbances have adverse effects to some species of wildlife. DNRC's policy framework addresses many habitat conditions for many species. The treatments proposed in the action alternatives identified for this project comply with all requirements of the SFLMP, ARMs and HCP. Discussion regarding how DNRC envisions managing for biodiversity is provided in the DEIS on the following pages 1, 11, 12, 21, 74, at the bottom of p. 319, and 320, and the bottom of p. 324, and 325. In applicable sections of the DEIS, resources specialists provided key references to applicable policies and references relevant to this overarching guiding framework, which collectively define how DNRC manages for biodiversity, including wildlife species. As required by MEPA, objective analysis and descriptions of the anticipated impacts from the proposed activities appropriately comprise the majority of the content contained in the DEIS.*

DNRC's approach to managing for biodiversity as stated and supported by the State Forest Land Management Plan (DNRC 1996), is one that intensively manages for healthy and diverse forest conditions through emulation of natural disturbance patterns and processes (SFLMP ROD, pp. ROD-1 and ROD-2). We believe we are faithfully and appropriately managing to maintain and promote biodiversity as required and envisioned under the SFLMP and Forest Management ARMs.

Northern goshawks were referenced and addressed in the DEIS on pp. 146, 148, 228, 298, 331, 332, 333, and great gray owls on pp. 298, 331 and 332. Both northern goshawks and great gray owls are assigned a Montana species of concern rank of G5S3, which indicates the species are globally common, widespread and abundant, and not vulnerable in most portions of their ranges, and at the state level may be potentially at risk because of limited and/or declining numbers, range, and/or habitat (MNHP 2018). A broad range of species/habitat sensitivity occurs within these coarse rankings and DNRC exercises discretion in evaluating the need to conduct more detailed evaluations for these species. Species of concern rankings are not statutory or regulatory classifications. However, these two species are afforded legal protections from take, like most other bird species in North America, under the Migratory Bird Treaty Act of 1918. As stated in the DEIS (pp. 331-333) suitable habitat for great gray owls and northern goshawks is present in the project area. An active great gray owl nest was located in 1996 on USFS land approximately 2.8 mi. SW of the project area, and an aggressive adult goshawk was documented in 2010 approximately 1.6 mi. west of the project area during the breeding season -- indicating a potential nest site nearby. Like many other native species to the area, DNRC considers them as potentially present on the project area. Surveys have not been conducted by DNRC, and regardless of whether a survey would find them present or absent, DNRC will considers them present for purposes of project planning and analysis. Both species have home range sizes that exceed the size of the 2,725-acre project area, and both species utilize a broad range of forest structures and compositions to meet their life requisites. DNRC provides for the general habitat needs for these species under the coarse filter approach of the State Forest Land Management Plan and Forest Management Rules (SLFMP ROD p.ROD-2). DNRC addresses late successional forest habitat conditions for these and other old growth-associated species through ARMs pertaining to old growth, snag maintenance, and coarse woody debris retention. In the Limestone West Timber Sale, none of the 225 acres of old growth or potential old growth are being proposed for logging (DEIS pp.24 and 25). Further, mature forest cover with >60% canopy cover under the most aggressive timber sale alternative (Alternative A) would remain on 1,450 acres (53%) of the 2,725-acre project area and approximately 22,221 acres (66%) of the 33,422-acre cumulative effects analysis area. Nonetheless, should an active or inactive nest of either species be located during project implementation, a DNRC wildlife biologist would be contacted and appropriate mitigations would be established to protect the nest and nesting birds, should they be present.

Both species defend nest sites aggressively. Should a timber sale alternative be selected, logging would be delayed each operating season until after June 15 after nestlings have hatched and adults defend nest sites aggressively. Should a timber sale alternative be selected, a DNRC forest officer would frequently be in contact with timber operators to ensure compliance with mitigation terms in the logging contract. If a nest is found, operations near the nest would cease and a DNRC biologist would be contacted. Site-specific measures would be developed and implemented to protect the nest and birds prior to re-starting activities. Inactive nests would also be protected when detected. In this manner, risk to both species would be minimized.

The stands that would be logged (particularly those that would be clearcut) would not provide suitable nesting sites for 80 years of more. However, both great gray owls and northern goshawks are highly mobile, have large home ranges, and can locate other suitable nest sites across the landscape, as long as

ample patches of mature forest are present. When active nests are detected, activity restrictions within a broad area around the active nest would be promptly developed to ensure that fledging young would be minimally disturbed.

Goshawks are foraging generalist predators that will hunt in dense forest, open stands and forest grassland/shrubland ecotones (MNHP 2018). As such, goshawks will successfully prey on numerous species found in forest openings, meadows and recent clearcuts. Logged areas are likely to continue to provide foraging habitat and opportunities for goshawks immediately following harvest completion, should a timber sale alternative be selected.

RESPONSE TO COMMENTER ID: 14, 70, 133, 140, 141

14. DNRC received 6 comments questioning the scales of analysis that were used to analyze impacts to wildlife and habitat. One commenter felt that considering species as present when they might not be is misleading and inappropriate. Two commenters suggested that cumulative effects generally were not adequately addressed.

DNRC RESPONSE: *To accurately analyze and disclose effects pertaining to specific types of resources such as soil, water, grizzly bears, elk, and general transportation etc., several different analysis areas were used that result in differing outputs based on the size of each applicable analysis area defined and used. DNRC analyzes impacts of proposed actions at the scale of the project area (the primary impact footprint for proposed activities), and an expanded cumulative effects analysis area (expanded potential impact zone where other past and ongoing projects in addition to the proposed DNRC action are evaluated). MEPA requires that agencies evaluate cumulative impacts associated with proposed actions, and reasonable and rational boundaries must be defined to address issues of concern that will result in meaningful and realistic evaluations (MEPA Handbook, p. 40, 2013). For example, in the wildlife analysis a 33,422-acre cumulative effects analysis area was used for grizzly bears in this project as it closely approximates the home range size of a female grizzly bear. Whereas, a 93,552-acre analysis area was defined to approximate a fall elk herd home range to evaluate impacts to elk security (DEIS, p. 123). Using roads as an example, the actual linear miles of permanent restricted road always remain the same for each alternative (i.e., 5.3 miles constructed under Alternative A, and 4.6 miles constructed under Alternative B). The densities, however, differ by the size of the analysis unit that they are applied to and the corresponding road amounts that may occur on other ownerships within each boundary. This is done so that resource specialists can inform the decision maker about specific impacts that may occur specific to individual resources and specific resource threshold parameters. We believe we provided an appropriate analysis of the impacts of the proposed alternatives at the appropriate scales as required under MEPA on wildlife and habitat, and no effects were downplayed or ignored.*

For species where habitats and or conditions are present to support a species, the species is presumed present and appropriate mitigations are implemented. This is done to ensure that potential effects considerations are addressed for species likely to be present and to ensure that all applicable mitigations are applied and adhered to during project development and implementation. All species have differing detection probabilities that may be influenced by variables such as vegetation density and season of the year, mating behavior of the species, color of the species, size of the species, vocalizations of the species etc.

Not detecting a species in a particular area at a particular point in time, does not necessarily indicate they are absent at other times of the year. Similarly, detecting a species in a brief survey does not necessarily indicate that the habitat is good quality where the detection is made, or that the species is reliant on the habitat, or that the species uses the habitat appreciably.

Cumulative effects were specifically addressed at the end of each subsection of the DEIS for all resource topics analyzed. Comprehensive lists of past and ongoing projects were also provided in addition to other specific analyses pertaining to changes in cover and roads, for example, which incorporated the influences of cover amount changes and road increases for all past projects and natural disturbances on the landscapes identified in each analysis. The current condition as it pertains to each resource category addressed in the DEIS was disclosed at the beginning of each subsection of the analysis (DEIS pp. 74, 82, 87, 93, 94, 98, 114, 128, 138, 144, 154, 165, 172, 182, 190, 203, 214, 222, 231, 238, 244, 260, 267).

RESPONSE TO COMMENTER ID: 14, 42, 66, 74, 133, 140

15. DNRC received 3 comments indicating that clearcuts would be too large and roads would create isolated islands of riparian and old growth areas. Some commenters suggested that old growth associated species such as, brown creeper, black-backed woodpecker, and northern flying squirrel were not adequately considered in the analysis. Two commenters voiced that old growth habitat should not be defined only using minimum criteria and that stands that some stands that do not meet minimum criteria should be identified as old growth and DNRC has misrepresented the truth.

DNRC RESPONSE: *DNRC addressed old growth management considerations and effects in the DEIS on pp. 24, 25, 70, 73, 74, 76-81. Within the project area, there are 119 acres that meet the minimum criteria to be classified as old growth. These stands are primarily located in the southeast quarter of section 10 and are not included in any of the proposed harvest units (DEIS p. 76). DNRC's approach to managing for biodiversity as stated and supported by the State Forest Land Management Plan (DNRC 1996), is one that intensively manages for healthy and diverse forest conditions through emulation of natural disturbance patterns and processes (SFLMP ROD, pp. ROD-1 and ROD-2). We believe we are faithfully and appropriately managing to maintain and promote biodiversity as required and envisioned under the SFLMP and Forest Management ARMs. An evaluation of the efficacy of DNRC's programmatic old growth management policy is beyond the scope of the analysis contained in the DEIS for the Limestone West Timber Sale (DEIS pp. 321-322).*

The brown creeper is considered a species of concern by the Montana Heritage Program. Brown creepers are considered an old growth-associated species and rely on late successional forests containing dead trees with large pieces of peeling bark that they nest under. A number of observations of brown creepers have been recorded in the vicinity of the project area and particularly in the vicinity of the Triple Tree Trail. Most observations have been made during fall, winter, and early spring, outside of the nesting season. Mature forest habitats that would be logged under the timber sale alternatives analyzed in the DEIS could remove habitat usable by brown creepers in the project area. At least 53% of the 2,725-acre project area would remain in dense forest cover with >60% canopy cover under both timber harvest alternatives

potentially usable by brown creepers, and no old growth that would provide the most likely suitable nesting habitat for brown creepers would be harvested.

Black-backed woodpeckers were addressed on page 188 of the DEIS. Please see DNRC response to comment 37 for additional discussion regarding black-backed woodpeckers.

Northern flying squirrels are an old growth associated wildlife species that is relatively common and widespread in western Montana, and they are not a sensitive species or listed species of concern. DNRC relies on the coarse filter approach by emulating natural disturbance patterns and processes to provide for the habitat needs for species such as the northern flying squirrel.

Green et al. (1992) do state that old growth habitat should not be defined only by the minimum criteria that they describe for each old growth type and that other stand attributes should also be considered. DNRC recognizes other important forest attributes that contribute to old growth complexity such as snags (ARM 36.11.411), large downed logs (ARM 36.11.414) and decadence (36.11.413). DNRC uses the minimum values specified in Green et al. (1992) as the starting point for when stands receive additional consideration for different types of management. ARM 36.11.403 explicitly states that DNRC shall define old growth stands as those that meet the minimum criteria for number, size, and age of large trees described by Green et al. (1992). This provides DNRC with a quantifiable and objective method to definitively state whether a stand is or is not old growth. To <u>not</u> consider stands that simply meet minimums as old growth, an important consequence is that they could be considered in the pool of other younger manageable acres and not be given ample consideration for management utilizing special old growth treatment prescriptions contained in ARMs. We believe that if we were to begin considering various stands as old growth that do not meet the minimum standards of Green et al. (1992) we would place our program in a position of legitimate criticism. Given our best objective assessment, old growth stands would not be treated as a part of any of the alternatives considered in the DEIS.

RESPONSE TO COMMENTER ID: 14, 66, 133

16. DNRC received 4 comments indicating that DNRC ignored wildlife-related comments provided by Montana FWP.

DNRC RESPONSE: *During project planning and the scoping phase of project development, DNRC communicated with Montana Fish, Wildlife and Parks staff about the proposed Limestone West Timber Sale. DNRC received a comment letter from Region 3, Supervisor, Sam Sheppard -- detailing their concerns and suggestions on April 22, 2016. DNRC conducted a field review of the project area with three biologists from Fish Wildlife and Parks on September 21, 2016. DNRC addressed concerns and issues raised by the department by responding to comments, adopting several suggested mitigations, and incorporating input received into development of issue statements and alternatives. DNRC managers met again with Fish, Wildlife and Parks managers in Helena on October 17, 2018 to discuss the possible reclamation of additional roads proposed under both alternatives. Fish, Wildlife and Parks submitted a second letter on October 29, 2018 documenting their concerns that will be addressed and included in the FEIS. These concerns are also addressed in responses to comments for the project.*

RESPONSE TO COMMENTER ID: 14, 66, 74, 140

17. DNRC received 2 comments stating that impacts to wildlife habitat would have irreversible detrimental effects and the DEIS did not adequately address this issue.

DNRC RESPONSE: *Irreversible and irretrievable impacts were addressed in the DEIS on p. 279 of the DEIS. The sentence on p. 335 of the DEIS referenced, incorrectly implies that logging will not cause irretrievable impacts. As stated correctly on p. 279 of the DEIS, any of the timber harvesting alternatives would cause live trees to be irretrievably lost; they would no longer contribute to future snag recruitment, stand structure and compositional diversity, aesthetics, wildlife habitat, the nutrient-recycling process, or any other important ecosystem functions, until they are replaced over time through forest succession. This statement in error will be corrected in the FEIS. Similarly, areas converted from timber production to permanent roads would be lost from timber production and would not function as forested lands for a relatively long period of time. However, areas that are initially lost to timber production through road construction could, over time, be reclaimed and function as productive forest land. Many of the stands in the 6,400-acre Bear Canyon block that were harvested from 1974 to 2007 (DEIS, p. 5, Figure I-1) possess numerous trees that have regenerated since initial harvests took places. Such regeneration (in the absence of natural disturbances) would be expected to continue over time.*

RESPONSE TO COMMENTER ID: 14, 113

18. DNRC received 1 comment regarding the following. The DEIS states that there are constraints on DNRC as they attempt to achieve a sustainable yield of timber. However, no such constraints for wildlife were identified in the DEIS, including those for grizzly bears and Canada lynx.

DNRC RESPONSE: *The discussion referenced in this comment regarding pp. 317 and 318 was in response to an earlier public comment voicing concern about the sustainability of forest management in the project area. Providing extensive lists and detailed descriptions of constraints evaluated and applied in DNRC's most recent sustainable yield calculations was considered beyond the scope of this project analysis as the calculation itself is not a proposed action alternative. A number of constraints were developed and applied to the calculation at the time it was conducted in 2015 that pertained to grizzly bears, Canada lynx, and bald eagles. Additional constraints were incorporated pertaining specifically to snag retention. In all, consideration was given to 13 individual species deemed most likely to be affected by forest management activities. A full summary can be viewed on pp. 218-227 of the 2015 Sustainable Yield Calculation Report (MBG 2015).* http://dnrc.mt.gov/divisions/trust/forest-management/sustainable-yield-calculation/public-participation

RESPONSE TO COMMENTER ID: 14

19. DNRC received 1 comment regarding the following. There was no documentation provided in the DEIS that the project will comply with the ESA by receiving an incidental take permit for Canada lynx and grizzly bears.

DNRC RESPONSE: *The DNRC Forest Management Program has incidental take coverage for 622,000 acres of HCP-covered forest lands, which include the Limestone West Timber Sale Project Area. Incidental take is not permitted on a project by project basis for DNRC timber sales as implied in this the comment, rather it is addressed at the programmatic level. Numerous references to the DNRC HCP were provided in the DEIS (pp. 1, 12, 15, 114, 124, 318, 328, 329, 335-338). Applicable HCP measures, as well as ARMs applicable to this project were contained in the Stipulations and Specifications section of the DEIS located on pp. 295-300. DNRC must track all commitments applied to each forest management project annually and provide detailed reports to the U.S. Fish and Wildlife Service (USFWS) (DNRC 2010, HCP Vol. 2, pp. 4-1 to 4-5). DNRC also has annual and five-year mandatory compliance and effectiveness monitoring commitments that it must meet in addition to annual reporting meetings and field reviews conducted with the USFWS. All projects covered under the Incidental Take Permit that implement applicable HCP measures are in compliance with the ESA as analyzed in the HCP FEIS and HCP Biological Opinion. We suggest that interested individuals review the following additional documents for further information regarding the DNRC HCP and ESA compliance.*

http://dnrc.mt.gov/divisions/trust/docs/forest-management/hcp/eis/volumeii/volume2.pdf

http://dnrc.mt.gov/divisions/trust/forest-management/hcp/HCPFAQ.pdf

http://dnrc.mt.gov/divisions/trust/docs/forest-management/hcp/rod.pdf

http://dnrc.mt.gov/divisions/trust/forest-management/hcp/hcp-implementation-and-monintoring

https://www.fws.gov/montanafieldoffice/Endangered_Species/Habitat_Conservation_Plans/DNRC_HCP.html

https://www.fws.gov/endangered/what-we-do/hcp_handbook-chapters.html

RESPONSE TO COMMENTER ID: 14

20. DNRC received 2 comments regarding the following. Roads and road densities and associated cumulative effects were not considered adequately in the DEIS analysis in regard to the full 6,400-acre DNRC block of lands in the bear canyon area. The DEIS failed to adequately evaluate the cumulative effects of past, present and foreseeable future logging plans in this area.

DNRC RESPONSE: *We believe road amounts and densities were considered adequately in the analysis. The project ID team appropriately identified the subset of DNRC lands where the primary "impact footprint" would occur as the project area for the proposed alternatives. Other DNRC lands were outside of this footprint for this particular project. For this analysis, a larger 33,422-acre cumulative effects analysis area was also used (Figure V-1, DEIS p. 72) to evaluate impacts as this area more closely approximates the home range size of wide-ranging species such as grizzly bears and Canada lynx and includes all other DNRC lands in the vicinity of the project area. All mapped restricted and roads open to motorized public access were considered in the cumulative effects analysis (including those in the east portion of the Bear Canyon Block) and their contribution to road amounts and densities pertaining to*

grizzly bears are incorporated into the values depicted in DEIS, Table W-6, p. 179. Thus, they were not excluded and were included at the appropriate scale for analysis. We believe it would have been less appropriate to consider road densities and impacts on DNRC lands alone at the scale of smaller 6,400-acre block. It is important to note that all of the referenced 7.7 miles of new road constructed under the Bear Canyon Project were reclaimed and slashed with debris following logging making travel by foot, horse or bicycle extremely difficult (see full text description DEIS p. 6).

Cumulative effects were specifically addressed at the end of each subsection of the DEIS for all resource topics analyzed. Comprehensive lists of past and ongoing projects were also provided in addition to other specific analyses pertaining to changes in cover and roads, for example, which incorporated the influences of cover amount changes and road increases for all past projects and natural disturbances on the landscapes identified in each analysis. The current condition as it pertains to each resource category addressed in the DEIS was disclosed at the beginning of each subsection of the analysis (DEIS pp. 74, 82, 87, 93, 94, 98, 114, 128, 138, 144, 154, 165, 172, 182, 190, 203, 214, 222, 231, 238, 244, 260, 267).

RESPONSE TO COMMENTER ID: 14, 133

21. DNRC received 1 comment regarding the following. DNRC provided false analysis information to the public regarding road impacts and hiding cover impacts on grizzly bears and violated MEPA and the ESA. Mortality risk of grizzly bears associated with newly created roads was not addressed in the DEIS.

DNRC RESPONSE: *We believe the grizzly bear analysis contained on pp. 172-181 accurately and objectively describes the adverse effects we expect could occur to grizzly bears, particularly those related to possible future recreational use associated with restricted roads as discussed repeatedly in the analysis. We would anticipate that any necessary agency motorized use for administrative purposes that would occur on restricted roads would average much less than one trip per week during each calendar year. Increasing mortality risk to grizzly bears by constructing roads and reducing forest cover was discussed on p. 172 of the DEIS. Virtually all analysis sections and data tables contained in the grizzly bear analysis address potential adverse effects in the context of harm or mortality to grizzly bears (DEIS pp. 172-181). The project would be in full compliance with HCP requirements and the ESA.*

RESPONSE TO COMMENTER ID: 14

22. DNRC received 1 comments regarding the following. Newly constructed road segments that are reclaimed will not exclude foot, bicycle, or horse travel. Long-term recreational use on reclaimed roads may be considerable.

DNRC RESPONSE: *We disagree that long-term recreational use on reclaimed roads may be considerable, and that any barriers created to restrict access will not exclude foot, bicycle, or horse travel. By reclaiming roads by placing large amounts of debris on them, it is very difficult to use these roads for travel by foot, bicycle, horse and ORV travel. As determined during follow up field evaluations, effort to travel on the reclaimed road surface is much greater than the effort needed to travel on adjacent non-roaded upland areas.*

RESPONSE TO COMMENTER ID: 14

23. DNRC received 1 comments regarding the following. Commenter states that DNRC misrepresented logging impacts on hiding cover for grizzly bears by inappropriately applying unit sizes, treatment types and the stated definition of hiding cover in the DEIS (p. 304). DNRC fudged their hiding cover definition to include clearcut stands and those treated using shelterwood descriptions.

DNRC RESPONSE: *The stated hiding cover definition included in the DEIS is in error was not an appropriate descriptor or for what was intended or required for compliance with applicable HCP commitments. The definition will be removed and replaced in the FEIS with the term visual screening where appropriate. The definition on p. 304 of the DEIS is too general to be applied specific to grizzly bears and too specific to be applied for the intended purpose to describe habitat conditions that would comply with DNRC HCP measure GB-NR4 DISTANCE TO VISUAL SCREENING (DNRC 2010, Vol.2, p. 2-13). The requirement for HCP commitment GB-NR4 is…**"DNRC will design new clearcut and seed tree cutting units to provide topographic breaks in view or to retain visual screening for bears by ensuring that vegetation or topographic breaks be no greater than 600 feet in at least one direction from any point in the unit."*

*Further, Visual Screening is defined as…**"Vegetation and/or topography providing visual obstruction capable of hiding a grizzly bear from view. The distance or patch size and configuration required to provide effective visual screening depends on the topography, and/or type and density of cover available"** (DNRC 2010, Vol.2, Ch. 11, page 11-13).*

We apologize for this inconsistency and the confusion it may have caused.

RESPONSE TO COMMENTER ID: 14

24. DNRC received 1 comments regarding the following. The proposed 100-foot riparian buffer widths are inadequate.

DNRC RESPONSE: *No-harvest riparian buffers would be retained along all class 1 streams in the project area that would span at least 100 feet on each side of the stream – totaling 200 feet. An expanded buffer would be retained along both sides of Limestone Creek that would vary from 100 to 350 feet on each side of the stream (DEIS p. 298). These buffers were intended to facilitate travel and habitat connectivity for Canada lynx and other wildlife species, and they would be retained in conjunction with other unharvested stands and partially harvested Douglas-fir stands. The expected result would be a mosaic of large and small forest patches and cover retained under both timber sale alternatives. We believe we have designed them adequately for their intended purpose and they would fully meet the requirements contained in the DNRC Forest Management HCP.*

RESPONSE TO COMMENTER ID: 14

25. DNRC received 1 comments regarding the following. DNRC has omitted activity restrictions for logging during the hunting season. Road densities would be high and habitat effectiveness would be low.

DNRC RESPONSE: *These observations are correct, and adverse effects to elk security and elk displacement would be expected. DNRC would propose to take advantage of fall and winter operating seasons if snow conditions allowed to expedite project completion and reduce the duration of disturbance that would be associated with logging activities. Spring restrictions, however, would be in place from April 1 to June 15 each year to minimize disturbance during the calving period (DEIS p. 298). The disturbance and road-related effects to elk security DNRC would anticipate during logging activities were presented on pp. 205 to 209, 212 and 213 of the DEIS.*

RESPONSE TO COMMENTER ID: 14

26. DNRC received 2 comments stating that DNRC has no long-term conservation strategy for old growth forests or associated species and references the pine marten, moose, and black-backed woodpeckers.

DNRC RESPONSE: *Maintenance of old growth forest is considered in the calculation of DNRC's timber harvest sustainable yield (DEIS p. 12), and DNRC has administrative rules in place that define old growth [ARM 36.11.403(48)], applicable old growth logging treatments [ARM 36.11.403(49) to (52)], and that require the consideration of old growth forest and treatments during project planning and completion [ARM 36.11.418]. DNRC address old growth management considerations and effects in the DEIS on pp. 24, 25, 70, 73, 74, 76-81. Within the project area, there are 119 acres that meet the minimum criteria to be classified as old growth. These stands are primarily located in the southeast quarter of section 10 and are not included in any of the proposed harvest units (DEIS p. 76). DNRC's approach to managing for biodiversity as stated and supported by the State Forest Land Management Plan (DNRC 1996), is one that intensively manages for healthy and diverse forest conditions through emulation of natural disturbance patterns and processes (SFLMP ROD, pp. ROD-1 and ROD-2). We believe we are faithfully and appropriately managing to maintain and promote biodiversity as required and envisioned under the SFLMP and Forest Management ARMs. An evaluation of the efficacy of DNRC's programmatic old growth management policy is beyond the scope of the analysis contained in the DEIS for the Limestone West Timber Sale (DEIS pp. 321-322).*

The sensitive species DNRC evaluated in the DEIS are included on pp. 187-190 with rationale that justified their dismissal from further consideration in the analysis. American martens are not considered a sensitive species by DNRC. Habitat for martens is considered secure and they are a relatively common furbearer in Montana. Further, there is a 2.5-month winter trapping season for martens in Montana with no limit on catch. http://fwp.mt.gov/eBook/hunting/regulations/2018/furbearer/index.html However, DNRC recognizes logging of mature and older forests can adversely affect martens. As such, discussion regarding project-related effects to martens was contained on pp. 130 to 134, 136, 139, 146 to 149, 151, 153, of the DEIS.

Moose were considered in detail in the DEIS. Please see the detailed discussion in the response to comment number 27. for more information regarding moose and their use of, and dependence on, old growth forest.

Black-backed woodpeckers were considered in this section of the DEIS and were dismissed. Black-backed woodpeckers are a highly nomadic species that is highly adapted to use and thrive in stand-replacement burns of mature and old forests. While they may utilize old forests with high levels of insect activity, key habitats for their conservation given their vulnerability to salvage logging are considered recent intensively burned forests with high densities of wood-boring beetle larvae.
http://fieldguide.mt.gov/speciesDetail.aspx?elcode=ABNYF07090

RESPONSE TO COMMENTER ID: 14, 133

27. DNRC received 2 comments stating that specific historic baseline conditions of old growth should be used to guide management of older forest habitats to meet the needs of wildlife such as, migratory songbirds, small mammals like pine marten and moose.

DNRC RESPONSE: *The analysis and assessment of DNRC's programmatic policy for managing old growth forest conditions was considered beyond the scope of the Limestone West Timber Sale Analysis. There are several sources that describe both historic cover type and age class distributions; DNRC relies on Losensky's (1997) report that described historical vegetation of Montana, including cover type and age class distributions, using forest inventory data from the 1930s. Losensky described forest conditions at the climatic section scale, which is typically larger than DNRC's administrative units; thus, conditions in one locale within a climatic section may differ from those presented at a broader scale. As with any estimation of historic forest conditions, Losensky's provide a point-in-time estimate of what forests may have been like in Montana prior to European settlement. Our goal, over a long-term and consistent with our coarse filter approach, is not to exactly match a point-in-time historic age class distribution, but to approximate it over the landscape as a whole. Data that provide reliable information regarding historical amounts of old growth that can be applied at meaningful scales and locations are scant.*

Issues regarding old growth associated birds and other species were dismissed from further analysis, because no old growth stands were proposed for treatment as a part of either Action Alternative A or B. Other relevant information regarding birds potentially of concern on the project is contained on pp. 187 to 189 of the DEIS. Information pertaining to northern goshawks and great gray owls was provided in the DEIS on pages 146, 148, 228, 298, 331, and 332.

Please see response to comment number 2 for information regarding pine marten.

Effects to moose were described on pages 192 to 202 in the DEIS. While Tyers (2003) found moose to be closely associated with old growth lodgepole pine with well-developed subalpine fir understories, other studies have documented use of different habitats (Langley 1993, Jenkins and Wright 1988, Poole and Stuart-Smith 2004). Moose are capable of using a broad range of habitat conditions throughout the year. Moose may also seek out heavy forest cover under harsh winter conditions, however, they can meet their life requisites in mid-aged to mature forest stands that provide ample security, cover, and forage. Moose

do not require an abundance of dead snags, coarse woody debris, abundant very large old trees and decadence characteristic of old growth forests (Green et al. 1992) to meet their life requisites.

RESPONSE TO COMMENTER ID: 14, 133

28. DNRC received 2 comments that expressed the general concern that the wildlife analysis or some portions was inadequate.

DNRC RESPONSE: *A comprehensive analysis was provided on pp. 123 to 228 of the DEIS. We believe the analysis is an accurate, objective and adequate portrayal of impacts to species of concern in the vicinity of the Limestone West Project Area.*

RESPONSE TO COMMENTER ID: 14, 133

29. DNRC received 1 comment that stated that intangible values regarding wildlife and habitat should not be ignored. They suggested that some could consider the intangible values as priceless. They acknowledged the difficulty in addressing such values, but that they should not be ignored.

DNRC RESPONSE: *We believe we provided an appropriate science-based analysis of the impacts of the proposed alternatives as required under MEPA on wildlife and habitat. We believe that attempts to construct an analysis that would objectively evaluate a full range of intangible values for multiple species and numerous concerned members of the public would be virtually impossible and beyond the scope of this project. We believe we have accurately identified and disclosed the relevant adverse effects on habitat and wildlife that would be expected (DEIS pp. 123 to 228).*

RESPONSE TO COMMENTER ID: 140

30. DNRC received 1 comment that stated that wildlife effects and habitat loss and degradation outweigh a couple of years of increased minimal job growth or income generation. Habitat destruction that would occur associated with the proposed project would far exceed the minimal net revenue gained to the trust fund.

DNRC RESPONSE: *We appreciate your concerns and values. DNRC must also consider its fiduciary obligations to Trust beneficiaries and comments from those who may have differing concerns and values. Unfortunately, our educational beneficiary institutions require tangible funding in the form of currency to continue to function, which requires the implementation of revenue-generating projects from state trust lands on a regular basis. We believe we provided an appropriate science-based analysis of the impacts of the proposed alternatives as required under MEPA on wildlife and habitat. We believe we have accurately identified and disclosed the relevant adverse effects on habitat and wildlife that would be expected (DEIS pp. 123 to 228).*

RESPONSE TO COMMENTER ID: 140

31. DNRC received 1 comment that stated that DNRC may be upsetting the ecological balance and that DNRC should have considered how effects of the proposed alternatives have may influence the relationship of species with each other and other intricate parts of the forest biome. Commenter questions if we completely understand the intricacies we are dealing with.

DNRC RESPONSE: *What the commenter intended in their reference to ecological balance wasn't clear to us. However, we know the forested ecosystems of Montana are very dynamic and have been influenced by numerous natural disturbances for centuries (Losensky 1997, Gruell 1983). We do understand some species interactions such as the effects that the removal of forest cover may have on prey species such as snowshoe hares, and subsequent indirect effects on predators such as Canada lynx, and northern goshawks. Similarly, we understand that reductions in relic large old trees and snags can have consequences for primary cavity-nesting species and subsequent indirect effects on secondary cavity-using species. However, ultimately the answer is "no" we do not completely understand all of the intricacies we are likely dealing with, or is it possible to. DNRC's State Forest Land Management Plan recognized this concern by adopting a management philosophy that assumed that emulating natural disturbance patterns and processes would help ensure that the habitat needs of native species would be addressed. Some adverse effects to some species periodically were also expected to occur, and a "fine filter" safety net is also used to ensure that the needs of rare or threatened species are also adequately considered during project development and completion. We believe we provided an appropriate science-based analysis of the impacts of the proposed alternatives as required under MEPA on wildlife and habitat.*

RESPONSE TO COMMENTER ID: 140

32. DNRC received 1 comment that stated that fragmenting the Gallatin Bridger Big Belt Corridor, reducing its effectiveness. They believe considering small projects at their small scale downplays or ignores the harmful effects of multiple projects of this type collectively. Commenter suggests that DNRC has noted that conditions are not ideal for a corridor in this area and they imply, therefore, that additional fragmentation will do no harm. And since the disruption will be temporary, wildlife will adjust and return back to their old migratory routes and behavior. They also question DNRC's use of science.

DNRC RESPONSE: *The Gallatin Bridger Big Belt Corridor mentioned was addressed in detail in the DEIS on pp. 127 to 138. Impacts were considered and analyzed at the scale of the smaller 2,725-acre project area, as well as the broader 33,422-acre cumulative effects analysis area. All habitat altering projects that we were aware of regardless of their size were considered in the larger cumulative effects analysis area as required under MEPA. Mature forested habitat patches would be fragmented and human use of proposed permanent restricted roads could displace wildlife in the project area for decades (DEIS p. 130, 132, and 134 to 137). To be clear, we believe there would be some adverse effects to some species as described in the DEIS, but we believe it is also important to accurately disclose and consider the many other influences on corridors and linkage for wildlife such as highways, open roads, railroads, road density, human site development, hiding cover and presence of riparian areas (Hilty et al. 2006, USFS*

2005, Servheen et al. 2003, Craighead et al. 2001) (See DEIS p. 128). In a monitoring study conducted by Craighead et al. from 2001 to 2009 (MDT 2010) on the 21-mile stretch of Interstate 90 between Bozeman and Livingston, MT they documented >10,000 vehicle passes daily and nearly 2,000 wildlife mortalities of numerous species. The authors also noted that the presence of I-90 was the most significant barrier to wildlife movement in the area and in the region (MDT 2010). We believe the analysis contained in the DEIS accurately discloses the likely anticipated direct, indirect and cumulative effects to wildlife that would occur as a result of the alternatives considered, and we used the best available information and professional judgement to accurately and objectively disclose anticipated effects. We believe we provided an appropriate analysis of the impacts of the proposed alternatives at the appropriate scales as required under MEPA on wildlife and habitat, and no effects were downplayed or ignored.

RESPONSE TO COMMENTER ID: 140

33. DNRC received 1 comment that stated that the effects of winter recreation on wildlife were sparsely addressed in the DEIS and little information about the increase in winter recreational use by the public, although it states that it is expected to rise. DNRC did not take this issue seriously and it should have been discussed in greater detail in the DEIS. Would it have been possible for DNRC to provide solid data about numbers of users?

DNRC RESPONSE: *Impacts associated with winter recreational effects were primarily addressed in the wildlife analysis subsections regarding big game winter range (DEIS p. 214) and wolverines (DEIS p. 181) where the issue was most applicable. DNRC purposely chose to not speculate about how much winter recreation could increase. In general, we would expect levels to likely rise in proportion to any increases that may occur in the local Bozeman population area. Solid data regarding future winter recreational use increases for DNRC's affected ownership were not available. We believe we provided an appropriate analysis of the impacts of the proposed alternatives at the appropriate scales as required under MEPA, and effects were given serious and appropriate consideration.*

RESPONSE TO COMMENTER ID: 140

34. DNRC received 1 comment questioning if fragmentation and biodiversity can exist on the same landscape? These questions are not answered in the DEIS. The DEIS does not state what biodiversity would look like here and when. Biodiversity cannot be achieved when you change wildlife behavior or when some species are pushed out to favor others.

DNRC RESPONSE: *DNRC has defined biodiversity as …"the variety of life and its processes" (DNRC 1996, ROD-12). Habitats, as examples, that range from open grassland, wet meadows, riparian, shrub steppe, hardwood forest, young conifer, mature conifer forest, old growth conifer forest support numerous wildlife species. Habitat fragmentation can occur naturally (Gruell 1983) or can be caused by man (Harris 1984). Forested landscapes of southwestern Montana and associated wildlife species evolved with periodic disturbances caused primarily by wildfires (Fisher and Clayton 1983). Naturally fragmented landscapes in Yellowstone National Park following the wildfires of 1988 provide a good example of this, where the landscape is comprised of a matrix of non-forest openings and meadows, small*

patches of older trees that escaped burning, large patches of young-aged forest established by the burns, and large patches of mature forest that escaped fire. Changes in wildlife behavior are common following both natural and man-caused disturbances, and they may or may not adversely affect the species in question. The questions posed here by the commenter regarding fragmentation were not raised as a concern during project scoping and they were beyond the scope of the DEIS analysis, which is why they were not specifically addressed. Please see Harris (1984) for additional information regarding fragmentation concepts, causes, and effects.

The SFLMP, Forest Management ARMs, and HCP for forested State Trust Lands provide extensive programmatic analyses and the policy framework for how DNRC conducts forest management activities and manages for biodiversity (DNRC 1996, ARMs 36.11.401 to 36.11.471, DNRC 2012). Management of forested state trust lands incorporates both coarse and fine filter approaches and emulation of natural disturbance patterns and processes consistent with those species evolved with in Montana. It is important to note that both natural and man-caused disturbances have adverse effects to some species of wildlife. DNRC's policy framework addresses many habitat conditions for many species. The treatments proposed in the action alternatives identified for this project comply with all requirements of the SFLMP, ARMs and HCP. Discussion regarding how DNRC envisions managing for biodiversity is provided in the DEIS on the following pages 1, 11, 12, 21, 74, at the bottom of p. 319, and 320, and the bottom of p. 324, and 325. In applicable sections of the DEIS, resources specialists provided key references to applicable policies and references relevant to this overarching guiding framework, which collectively define how DNRC manages for biodiversity, including wildlife species. As required by MEPA, objective analysis and descriptions of the anticipated impacts from the proposed activities appropriately comprise the majority of the content contained in the DEIS.

RESPONSE TO COMMENTER ID: 140

35. DNRC received 1 comment that states that the Limestone West Timber Sale Project is likely to have effects on the overall populations of grizzly bears, especially those that tend to travel and roam within the Gallatin Bridger Big Belt Wildlife Corridor or those bears along the southern face of the Gallatin Range.

DNRC RESPONSE: *We believe the analysis contained in the DEIS accurately describes and discloses the anticipated effects to grizzly bears (DEIS pp. 172 to 181). Given the limited level of current use of the northerly portion of the Gallatin Range by grizzly bears, the scope and scale of the proposed timber sale alternatives, and the applied mitigations that would be required under the DNRC HCP, we would not anticipate any adverse effects to grizzly bears that would be measurable at the population level. We are unaware of any successful crossings by grizzly bears of I-90 along the 21-mile stretch between Bozeman and Livingston Montana. We presume the commenter intended to state the "northern" face of the Gallatin Range.*

RESPONSE TO COMMENTER ID: 140

36. DNRC received 1 comment that states that denning habitat for wolverines is extremely near the project area (80% of denning habitat is >1 mile from project area), which should be enough

to cancel the project. The DEIS acknowledges the situation on the ground, but seems to downplay the seriousness of the potential result of lost habitat.

DNRC RESPONSE: *We believe the wolverine analysis presented on pp. 181 to 186 of the DEIS provides an accurate and objective assessment of potential project-related impacts to wolverine habitat and wolverines. Impacts associated with denning habitat and denning wolverines would be confined to the 2 to 3-year period active operations are taking place, and activity restrictions would be required for two harvest units that lie nearest potential denning habitat in the project area to minimize potential for disturbance. By noting that 80% of potential denning habitat is >1 mile from project area on p. 182 of the DEIS, we provided a sound indication using a commonly-used metric that the potential for disturbing denning wolverines through mechanical logging activities would be low. We believe tree harvesting itself would have little adverse effect on wolverine use of the project area in the future. However, new restricted roads could provide a source of additional displacement in conjunction with increased public recreation over a long period of time if they are not reclaimed (DEIS pp. 181 to 182). We do not believe this assessment downplays effects to wolverines and we would anticipate some potential adverse effects (DEIS p. 184).*

RESPONSE TO COMMENTER ID: 140

37. DNRC received 1 comment that states that that the DEIS is deceiving Montana citizens by claiming this is a temporary project only lasting two or three years, and it is over and done. DNRC forgot to discuss the indirect recreational aspect of the project as new roads and openings into the forest will be used by more people through the years. Commenter believes the impacts will be more long lasting than two or three years. Commenter then notes that the DEIS admits to the project's negative effects to wildlife and quotes a statement from the DEIS from p. 157 that states that wildlife displacement could be expected for several decades.

DNRC RESPONSE: *We note that to state DNRC forgot important points to disclose in the analysis and then state where the matter was discussed in the analysis is contradictory. Numerous places in the wildlife analysis contained in the DEIS DNRC disclosed the direct and indirect disturbance-related effects of: 1) actual noise and disturbance created by the logging activity itself, 2) the potential effects of the removal of trees and other vegetation during logging and road building, and 3) the indirect effects of creating new road prisms that recreationists could find attractive to use during all seasons of the year and the impacts these human activities could have on habitat and wildlife over the short and long term. We believe the effects of tree removal and public road use could last for several decades, particularly until forest cover re-grows (DEIS pp. 130, 132, 134 to 137, 142, 143, 146 to 149, 151, 153, 156 to 163, 167 to 171, 178, 180, 186, 193 to 196, 198 to 202). It is important to note that DNRC would maintain the authority to be able decommission roads and/or unauthorized trails at any time to address environmental or safety concerns that may arise in the future. Thus, should serious adverse recreation-related effects arise in the future, they could potentially be remedied. The implication that key considerations regarding recreational use were forgotten, downplayed, or omitted in the wildlife analysis is not factual (DEIS pp.*

129 to 135, 137, 138, 145, 147, 149, 150, 151, 153 to 164, 169, 171, 173, 174, 176 to 178, 180, 181, 183, 184, 186, 190, 192 to 202, 204 to 210, 212, 213, 215 to 226).

RESPONSE TO COMMENTER ID: 140

38. DNRC received 1 comment that states that the ecological damage done by either alternative far outweighs the economic benefit.

DNRC RESPONSE: *We appreciate your concerns and values. DNRC must also consider its fiduciary obligations to Trust beneficiaries and comments from those who may have differing concerns and values. Unfortunately, our educational beneficiary institutions require tangible funding in the form of currency to continue to function, which requires the implementation of revenue-generating projects from state trust lands on a regular basis. We believe we provided an appropriate science-based analysis of the impacts of the proposed alternatives as required under MEPA on wildlife and habitat. We believe we have accurately identified and disclosed the relevant adverse effects on habitat and wildlife that would be expected (DEIS pp. 123 to 228). All of the relevant decision criteria including tradeoffs, effects, and risks will be weighed by the decision maker for the project following their review of all public comment, and completion and review of the Final EIS.*

RESPONSE TO COMMENTER ID: 140

Detailed DNRC Responses to Comments from the Native Ecosystems Council and Alliance for the Wild Rockies on the Limestone West Timber Sale Draft EIS

(Original comments were paraphrased)

1.) Comment p. 1 paras. 1 and 2, and p. 2 para. 1 – DNRC states that it manages for healthy and biologically diverse forests and desired future conditions. However, no rationale is ever provided as to how desired future conditions were determined. The commenter also stated that: 1) the desired conditions do not identify age class diversity, even though it is one of the objectives to achieve biodiversity, 2) there is no clear connection made between DNRC's claims for managing for biodiversity of forests and the proposed project and there is no rationale provided for how that proposed project will maintain biodiversity that includes wildlife.

Response: *DNRC uses a site-specific model described in ARM 36.11.405 to assign a desired forest cover type to each stand in DNRC's forest inventory. In the DEIS p. 74, DNRC provided a reference for this rule (ARM 36.11.405) under analysis methods in the applicable section. The desired forest cover types reflect those that have historically occurred in Montana. The site-specific model follows an iterative process using DNRC's forest inventory data to assign to desired forest type for each stand based on the evidence and amount of species presence in that stand. The desired future condition in terms of forest cover types within the project area are shown on pages 74-75 of the DEIS. Current and historical comparisons provide a useful guide as to cover type representations on DNRC lands today compared with those on the landscape approximately 100 years ago. DNRC uses this information to manage for increased acreages of cover types that may be currently under-represented when compared with historical conditions.*

DNRC does not have a specific age class target for individual areas or administrative Units, but instead uses a coarse filter approach to maintain an appropriate mix of stand structures and compositions on its ownership (ARM 36.11.404). The appropriate mix of stand structures and compositions is based on ecological factors including land type (geology), climate, habitat type, and disturbance regime, and in forested areas, the characteristics of species composition and cover type distribution, age class, and stand structure are used to describe forest conditions. On lands such as the project area, we attempt to promote and maintain the forest types and structures historically present on the landscape, recognizing that forests are dynamic and that those conditions will change over time. Given the dynamic nature of forested landscapes of western Montana and very ephemeral nature of young stands, managing for specific percentages of all forest age classes is not practical.

There are several sources that describe both historic cover type and age class distributions; DNRC relies on Losensky's (1997) report that described historical vegetation of Montana, including cover type and age class distributions, using forest inventory data from the 1930s. Losensky described forest conditions at the climatic section scale, which is typically larger than DNRC's administrative units; thus, conditions in one locale within a climatic section may differ from those presented at a broader scale. As with any estimation of historic forest conditions, Losensky's provide a point-in-time estimate of what forests may have been like in Montana prior to European settlement. Our goal, over a long-term and consistent with

our coarse filter approach, is not to exactly match a point-in-time historic age class distribution, but to approximate it over the landscape as a whole.

The State Forest Land Management Plan (SFLMP), Forest Management Administrative Rules of Montana (ARMs), and Habitat Conservation Plan (HCP) for forested State Trust Lands provide extensive programmatic analyses and the policy framework for how DNRC conducts forest management activities manages for biodiversity (DNRC 1996, ARMs 36.11.401 to 36.11.471, DNRC 2012). Management of forested state trust lands incorporates both coarse and fine filter approaches and emulation of natural disturbance patterns and processes consistent with those species evolved with in Montana. It is important to note that both natural and man-caused disturbances have adverse effects to some species of wildlife. DNRC's policy framework addresses many habitat conditions for many species. The treatments proposed in the action alternatives identified for this project comply with all requirements of the SFLMP, ARMs and HCP. Discussion regarding how DNRC envisions managing for biodiversity is provided in the DEIS on the following pages 1, 11, 12, 21, 74, at the bottom of p. 319, and 320, and the bottom of p. 324, and 325. In applicable sections of the DEIS, resources specialists provided key references to applicable policies and references relevant to this overarching guiding framework, which collectively define how DNRC manages for biodiversity, including wildlife species. As required by MEPA, objective analysis and descriptions of the anticipated impacts from the proposed activities appropriately comprise the majority of the content contained in the DEIS.

2.) Comment p. 2, para. 2 – Discussion on pages 317 and 318 state that there are constraints on DNRC as they attempt to achieve a sustainable yield of timber… However, no such constraints for wildlife were identified in the DEIS, including those for grizzly bears and Canada lynx.

Response: *The discussion referenced in this comment regarding pp. 317 and 318 was in response to an earlier public comment voicing concern about the sustainability of forest management in the project area. Providing extensive lists and detailed descriptions of constraints evaluated and applied in DNRC's most recent sustainable yield calculations was considered beyond the scope of this project analysis as the calculation itself is not a proposed action alternative. A number of constraints were developed and applied to the calculation at the time it was conducted in 2015 that pertained to grizzly bears, Canada lynx, and bald eagles. Additional constraints were incorporated pertaining specifically to snag retention. In all, consideration was given to 13 individual species deemed most likely to be affected by forest management activities. A full summary can be viewed on pp. 218-227 of the 2015 Sustainable Yield Calculation Report (MBG 2015).* http://dnrc.mt.gov/divisions/trust/forest-management/sustainable-yield-calculation/public-participation

3.) Comment p. 2, para. 2 – There was no documentation provided in the DEIS that the project will comply with the ESA by receiving an incidental take permit for Canada lynx and grizzly bears.

Response: *The DNRC Forest Management Program has incidental take coverage for 622,000 acres of HCP-covered forest lands, which include the Limestone West Timber Sale Project Area. Incidental take is not permitted on a project by project basis for DNRC timber sales as implied in this the comment, rather*

it is addressed at the programmatic level. Numerous references to the DNRC Habitat Conservation Plan were provided in the DEIS (pp. 1, 12, 15, 114, 124, 318, 328, 329, 335-338). Applicable HCP measures, as well as administrative rule requirements applicable to this project were contained in the Stipulations and Specifications section of the DEIS located on pp. 295-300. DNRC must track all commitments applied to each forest management project annually and provide detailed reports to the U.S. Fish and Wildlife Service (USFWS) (DNRC 2010, HCP Vol. 2, pp. 4-1 to 4-5). DNRC also has annual and five-year mandatory compliance and effectiveness monitoring commitments that it must meet in addition to annual reporting meetings and field reviews conducted with the USFWS. All projects covered under the Incidental Take Permit that implement applicable HCP measures are in compliance with the ESA as analyzed in the HCP FEIS and HCP Biological Opinion. We suggest that interested individuals review the following additional documents for further information regarding the DNRC HCP and ESA compliance.

http://dnrc.mt.gov/divisions/trust/docs/forest-management/hcp/eis/volumeii/volume2.pdf

http://dnrc.mt.gov/divisions/trust/forest-management/hcp/HCPFAQ.pdf

http://dnrc.mt.gov/divisions/trust/docs/forest-management/hcp/rod.pdf

http://dnrc.mt.gov/divisions/trust/forest-management/hcp/hcp-implementation-and-monintoring

https://www.fws.gov/montanafieldoffice/Endangered_Species/Habitat_Conservation_Plans/DNRC_HCP.html

https://www.fws.gov/endangered/what-we-do/hcp_handbook-chapters.html

4.) Comment p.2, para. 3 -- The DEIS at p. 335 states that MEPA requires DNRC to address irretrievable and irreversible impacts associated with their forest management activities. This requirement was never met in the DEIS for the Limestone West Project and is relevant to the entirety of the 6,400-acre Bear Canyon Block.

Response: *Irreversible and irretrievable impacts were addressed in the DEIS on p. 279 of the DEIS. The sentence on p. 335 of the DEIS referenced, incorrectly implies that logging will <u>not</u> cause irretrievable impacts. As stated correctly on p. 279 of the DEIS, any of the timber harvesting alternatives would cause live trees to be irretrievably lost; they would no longer contribute to future snag recruitment, stand structure and compositional diversity, aesthetics, wildlife habitat, the nutrient-recycling process, or any other important ecosystem functions, until they are replaced over time through forest succession. This statement in error will be corrected in the FEIS. Similarly, areas converted from timber production to permanent roads would be lost from timber production and would not function as forested lands for a period of time. However, areas that are initially lost to timber production through road construction could, over time, be reclaimed and function as productive forest land. Many of the stands in the 6,400-acre Bear Canyon block that were harvested from 1974 to 2007 (DEIS, p. 5, Figure I-1) possess numerous*

trees that have regenerated since initial harvests took places. Such regeneration (in the absence of natural disturbances) would be expected to continue over time.

5.) Comment p. 3, para. 1 – Grizzly bear management is a violation of the Endangered Species Act (ESA) and the MEPA; management proposals for grizzly bears lack both transparency and factual accuracy.

Response: *We believe the grizzly bear analysis contained on pages 172-181 is transparent, factual, and accurate and fully complies with MEPA. As a part of all proposed action alternatives, DNRC would implement all applicable HCP measures designed to minimize and mitigate adverse effects to grizzly bears, and as such, would be if full compliance with applicable requirements under Section 10 of the ESA.*

6.) Comment p. 3, para. 2 – The commenter noted that a specific "surrogate" for take for the Limestone West Project was never identified in the DEIS, and that DNRC did not provide essential information to the public that documents mitigation measures would actually be implemented for grizzly bears. The commenter also stated that there are mitigation measures and a number of geographic areas identified in the HCP, but that it isn't clear that the HCP covers the Limestone West Project Area. The commenter further suggests that HCP mitigations do not exist, that DNRC has violated the ESA, has not been transparent in addressing impacts to grizzly bears in the DEIS analysis and has violated MEPA.

Response: *It is unclear what the commenter was concerned about regarding a surrogate for take. The Limestone West Timber Sale Project Area lands are covered under the DNRC HCP. As previously stated, we believe the grizzly bear analysis contained on pages 172-181 is transparent, factual, and accurate and fully complies with MEPA. Take for grizzly bears was permitted for DNRC's forest management program using identified land areas that possessed (or would likely possess over the 50-year permit term) greater than 1mi/sq. mi open road density and greater than 2 mi./sq. mi. total road density (including both open and restricted road classes). Take was extensively addressed in the HCP FEIS (DNRC 2010, Vols. 1 and 2) and the supporting biological opinion. Revisiting this analysis was considered beyond the scope of this DEIS. We refer interested readers to the following sites for complete information.*

http://dnrc.mt.gov/divisions/trust/docs/forest-management/hcp/eis/volumei/volumei.pdf

http://dnrc.mt.gov/divisions/trust/docs/forest-management/hcp/eis/volumeii/volume2.pdf

https://www.fws.gov/montanafieldoffice/Endangered_Species/Habitat_Conservation_Plans/DNRC_HCP.html

Applicable HCP measures, as well as administrative rule requirements applicable to this project were contained in the Stipulations and Specifications section of the DEIS located on pp. 295-300. DNRC tracks application and implementation of all applicable HCP measures on implementation checklists that are compiled and reviewed by the USFWS annually. The suites of HCP commitments that apply to Limestone West Project Area include those for scattered lands in Non-Recovery Occupied Grizzly Bear

Habitat that contain habitat for Canada Lynx. HCP label references include grizzly bear commitments GB-PR, GB-NR, lynx commitments LY-HB, and aquatic commitments AQ-RM, AQ-SD, AQ-CWE (DNRC 2010, Vol 2. Ch 2.). Some commitments are applied indirectly at a programmatic level such as required grizzly bear avoidance safety training, and contract requirements for food storage. For more information regarding implementation of commitments and compliance, four completed annual monitoring reports and the first 5-year HCP monitoring report can be viewed at the link below. The USFWS has the legal authority and responsibility of ensuring DNRC is meeting its legal requirements under the ESA.

http://dnrc.mt.gov/divisions/trust/forest-management/hcp/hcp-implementation-and-monintoring

Maps depicting HCP covered lands (HCP Project Area) where the Bear Canyon Block including the Limestone West Timber Sale Project Area are present in the HCP and can be found on the following pages of the DNRC HCP at the link below (Figure C-1, p. C-1; Figure C-2, p. C-3; Figure C-9 p. C-21; Figure C-17 p. C-37; Figure C-20, p. C-43). All mitigations and rationale can also be found on pp. 2-5 to 2-128 in the document at the link below.

http://dnrc.mt.gov/divisions/trust/docs/forest-management/hcp/eis/volumeii/volume2.pdf

7.) Comment p. 3, para. 3 – Commenter noted that road density estimates in the grizzly bear analysis that were presented in the DEIS on pp. 174-176 are high and that "take" of grizzly bears will be triggered by the Limestone West Timber Sale under both action alternatives A and B.

Response: *We believe the analysis is accurate and adequately describes the anticipated effects to grizzly bears. ESA protections follow the listed species, however, we also believe it is important to note when considering potential impacts to grizzly bears, that these lands occur well outside of any federally designated grizzly bear recovery zone (eg. Greater Yellowstone Ecosystem). Recovery zones are the geographic areas containing habitat the USFWS considers necessary to achieve recovery of the species (USFWS 1993) where the greatest level of protections are typically applied. While the Limestone West Project Area falls within an area considered occupied by grizzly bears, DNRC is not aware of any recent sightings of grizzly bears within the project area. DNRC acknowledges that habitat conditions for grizzly bears would be degraded under both timber sale alternatives increasing risk and the potential for adverse impacts to bears (DEIS pp 174-176). However, given the apparent low density of grizzly bears in the northerly portion of the Gallatin Range, the potential for adverse effects that would result in harm to grizzly bears would also be relatively low and infrequent. Please refer to the response to comment 6. above regarding the 50-year HCP and permitting of incidental take for grizzly bears.*

8.) Comment p.4, para.1 -- Commenter expresses concern that roads and road densities were not adequately considered in the DEIS analysis, and that roads in the earlier Bear Canyon Timber Sale were not considered adequately. Further, the commenter suggests that a different road density analysis was warranted for all 6,400 acres of DNRC ownership in the whole Bear

Canyon Block and that 7.7 miles of new road were also added for the earlier Bear Canyon Project.

***Response*:** *We believe road amounts and densities were considered adequately in the analysis. The project ID team appropriately identified the subset of DNRC lands where the primary "impact footprint" would occur as the project area for the proposed alternatives. Other DNRC lands were outside of this footprint for this particular project. For this analysis, a larger 33,422-acre cumulative effects analysis area was also used (Figure V-1, DEIS p. 72) to evaluate impacts as this area more closely approximates the home range size of wide-ranging species such as grizzly bears and Canada lynx and includes all other DNRC lands in the vicinity of the project area. All mapped restricted and roads open to motorized public access were considered in the cumulative effects analysis (including those in the east portion of the Bear Canyon Block) and their contribution to road amounts and densities pertaining to grizzly bears are incorporated into the values depicted in DEIS, Table W-6, p. 179. Thus, they were not excluded and were included at the appropriate scale for analysis. We believe it would have been less appropriate to consider road densities and impacts on DNRC lands alone at the scale of smaller 6,400-acre block. It is important to note that all of the referenced 7.7 miles of new road constructed under the Bear Canyon Project were reclaimed and slashed with debris following logging making travel by foot, horse or bicycle extremely difficult (see full text description DEIS p. 6).*

9.) Comment p.4, para.2 – Commenter observed that there is no information provided regarding how much take of grizzly bears would result from this project both during and after logging, and no information was provided about how grizzly bear management was incorporated into the Limestone West Timber Sale Project.

Response: The USFWS is the agency that has the primary responsibility for evaluating, permitting and prosecuting matters involving take of federally listed threatened and endangered species. Any potential take that may arise as a result of the Limestone West Timber Sale was permitted by the USFWS at the programmatic level during development and adoption of the HCP (DNRC 2010). Permitting of take is beyond the scope of this project analysis. We disagree that the public was provided no information regarding how grizzly bear management is addressed in this project. Matters pertaining to grizzly bears and how this project may affect grizzly bears was discussed in detail in the DEIS on pp. 172-181 and in mitigations found on pp. 297-298.

10.) Comment p. 4, para. 3– Commenter stated that DNRC provided false analysis information to the public regarding road impacts and hiding cover impacts on grizzly bears and violated MEPA and the ESA.

Response: *We are unclear as to the specific portions of the grizzly bear analysis the commenter believes is false. We believe the grizzly bear analysis contained on pp. 172-181 accurately and objectively describes the expected adverse effects we expect could occur to grizzly bears, particularly those related to possible future recreational use associated with restricted roads as discussed repeatedly in the analysis.*

We would anticipate that any necessary agency motorized use for administrative purposes that would occur on restricted roads would average much less than one trip per week during each calendar year.

11.) Comment p. 5, para. 1 – The commenter referenced a study by Lamb et al. (2017) who noted that closing roads from public motorized use resulted in a 50% increase in grizzly bear density over a 20-year period.

Response: *We acknowledge that the Lamb et al. 2017 study provides scientific support for restricting and reclaiming roads as proposed to lessen effects to grizzly bears as a part of both proposed timber sale alternatives in the Limestone West Timber Sale Project.*

12.) Comment p. 5, para. 2 – The commenter identifies and restates references several places in the DEIS where activities and their impacts to grizzly bears are described (eg. DEIS 254, 158, 173).

Response: *We believe that these restated references affirm that DNRC objectively and transparently described and reported potential adverse effects to grizzly bears that could result from the Limestone West Timber Sale alternatives.*

13.) Comment p. 5 para. 3 – Commenter states that long-term recreational use on reclaimed roads may be considerable, and that any barriers created to restrict access will not exclude foot, bicycle, or horse travel.

Response: *We disagree that long-term recreational use on reclaimed roads may be considerable, and that any barriers created to restrict access will not exclude foot, bicycle, or horse travel. By reclaiming roads by placing large amounts of debris on them, it is very difficult to use these roads for travel by foot, bicycle, horse and ORV travel. Effort to travel on the reclaimed road surface is much greater than the effort needed to travel on adjacent non-roaded upland areas.*

14.) Comment p. 6 para. 2 – Commenter suggests that any future use or intent of future use of reclaimed roads renders their closure in this manner ineffective because bears will continue to be adversely influenced by the presence of the prism, periodic removal of vegetation at the time of future use, and the motorized activity that would take place on the roads associated with future projects.

Response: *We believe any such influence would be minimal. From the standpoint of grizzly bears and grizzly bear security, we believe that by reclaiming roads in the fashion proposed in the Limestone West Timber Sale Project they would function much more as "non-road" sites when compared with roads that would be simply gated or left open for public motorized uses. While the road prism itself would be retained, we would anticipate any future clearing and motorized uses of the roads to take place many years to decades out into the future. At such a point in the future we would also expect conifer regeneration and cover to have increased following the disturbance caused by logging, providing additional hiding cover and security on the landscape. By making the road surface impassible to all motorized and most non-motorized uses, there would be a substantial reduction in potential for human*

non-motorized uses and periodic motorized administrative uses that could otherwise occur. Impacts associated with any future uses of reclaimed roads (with the exception of emergency wildfire suppression) would have to be considered under MEPA as separate agency actions.

15.) Comment p. 6 para. 3 – Commenter states that mortality risk of grizzly bears associated with newly created roads was not addressed in the DEIS.

Response: *Increasing mortality risk to grizzly bears by constructing roads and reducing forest cover was discussed on p. 172 of the DEIS. Virtually all analysis sections and data tables contained in the grizzly bear analysis address potential adverse effects in the context of harm or mortality to grizzly bears (DEIS pp. 172-181).*

16.) Comment p. 7 para. 2 -- Commenter states that increased mortality risk of the Limestone West Project on grizzly bears will have the biggest effect on allowed take from project activities.

Response: *Incidental take for DNRC's Forest Management Program (including this project), was programmatically permitted as a part of the HCP development and permitting process by the USFWS in 2011. The implication there is a project-level incidental take permitting process for grizzly bears triggered by increases in mortality risk is not factual. Given the: 1.) relatively low known use of the project area by grizzly bears 2.) the type of project activities being proposed (forest management with no human developments), and 3.) the relatively small scale of the project (<1% area equivalent of a female grizzly bear home range in Yellowstone National Park at 69,440 acres; https://www.nps.gov/yell/learn/yellowstone-grizzly-bear-facts.htm), we believe any additional mortality risk to grizzly bears will be relatively low. Further, we believe the grizzly bear analysis contained on pages 172-181 of the DEIS is objective, accurate, transparent, and factual.*

17.) Comment p. 7 para. 3, and p. 8 para 1. – Commenter states that DNRC has misrepresented project impacts on grizzly bears associated with reduced hiding cover and the creation of large non-cover areas, and that DNRC has mislead the public by creating and using 2 categories of cover in the analysis.

Response: *Two categories of forest cover were used in the project analysis to aid description of effects of the proposed action alternatives on wildlife species. We believe the class encompassing the lower range of canopy cover 40 to 59% accurately describes a structural forest condition where stand attributes can begin to provide shade, protection from wind, thermal protection, and security for many species of wildlife, including grizzly bears. Other studies have used a 40% lower threshold of cover in a similar fashion (Poole and Stuart-Smith 2004:10). We note that the commenter references a study by Blanchard (1983) who found that the majority of feeding and bedding areas of grizzly bears occurred in stands with moderate to dense canopy cover (25% to 75%). We note that this range extends well below the lower canopy class DNRC used in the grizzly bear analysis. We believe that to have omitted this lower cover class and only included the ≥60% class as providing cover would have been inaccurate and inappropriate. Because wildlife security was a sizable concern for this project, DNRC identified acreages separately of habitat that would be retained in the highest cover classes (≥60%) to provide the public and decision*

maker a clearer idea of how much dense forest structure would be maintained within the project area and cumulative effects analysis area under each alternative.

18.) Comment p.8 para.2, and p. 9 paras. 1, 2, 3 -- Commenter states that DNRC has misrepresented logging impacts on hiding cover for grizzly bears by inappropriately applying unit sizes, treatment types and the stated definition of hiding cover in the DEIS (p. 304). DNRC has fudged their hiding cover definition to include clearcut stands and those treated using shelterwood descriptions. DNRC states that 436 acres of clearcuts are proposed (DEIS 19), but only 371 acres of cover would be removed. DNRC is applying a new definition of hiding cover and that non-cover areas in shelterwood and clearcut harvest units are inappropriately being considered as cover. As such, non-cover openings will not actually be required to provide hiding cover within 600 feet.

Response: *The stated hiding cover definition included in the DEIS is in error was not an appropriate descriptor or for what was intended or required for compliance with applicable HCP commitments. The definition will be removed and replaced in the FEIS with the term visual screening where appropriate. The definition on p. 304 of the DEIS is too general to be applied specific to grizzly bears and too specific to be applied for the intended purpose to describe habitat conditions that would comply with DNRC HCP measure GB-NR4 DISTANCE TO VISUAL SCREENING (DNRC 2010, Vol.2, p. 2-13). The requirement for HCP commitment GB-NR4 is…**"DNRC will design new clearcut and seed tree cutting units to provide topographic breaks in view or to retain visual screening for bears by ensuring that vegetation or topographic breaks be no greater than 600 feet in at least one direction from any point in the unit."*

*Further, Visual Screening is defined as…**"Vegetation and/or topography providing visual obstruction capable of hiding a grizzly bear from view. The distance or patch size and configuration required to provide effective visual screening depends on the topography, and/or type and density of cover available"** (DNRC 2010, Vol.2, Ch. 11, page 11-13).*

We regret this definition error and apologize for this inconsistency and the confusion it may have caused.

The acreage estimates for treatment types for Alternative A and B in the table on p. 19 of the DEIS are in error and will be corrected in the FEIS. The values contained in the wildlife analysis that are in question are accurate as stated on pp. 174 and 175 if the DEIS. Cover would be removed on 371 acres that would be clearcut under Alternative A and 284 acres under Alternative B. The proposed treatment type that would retain cover post harvest is termed as a "shelterwood with reserves" (DEIS p. 73). We acknowledge that the definitions included in the DEIS for both shelterwood and shelterwood with reserves (DEIS p. 73 and 308) conflict with the proposed treatment description of removing 50% of the trees (DEIS p. 78, 80). To be clear, all of the definable included Douglas-fir patches and mixed conifer patches would planned for retaining 50% of the existing trees, which would ensure at least half of the trees and cover would remain following logging. This fact and definitions will be clarified in the FEIS.

19.) Comment p. 9 para. 4, p. 10 para. 1 – Commenter states that DNRC did not include an analysis of security habitat for grizzly bears for the project or cumulative effects analysis area. The commenter also criticizes DNRC for not exploring how the project area lands could be managed for grizzly bear security areas including lands in other ownerships, existing wilderness areas, and unroaded lands in the vicinity of the bear canyon block. Commenter concludes that DNRC's failure to consider how DNRC lands could promote conservation of grizzly bears by retaining and promoting security areas for grizzly bears is a violation of ESA and MEPA.

Response: *We believe the grizzly bear analysis contained on pp. 172-181 adequately and objectively describes the expected adverse effects we believe could occur to grizzly bears, particularly those related to possible future recreational use associated with restricted roads as discussed repeatedly in the analysis.*

In 2011 a thorough security analysis for grizzly bears was conducted for the DNRC HCP (DNRC 2010, Vol. 1 pp. 4-338 to 4-341). To minimize impacts to grizzly bears associated with reductions in security, the DNRC HCP requires that scattered parcels within grizzly bear recovery zones adhere to a 4-year active, 8-year rest restriction for commercial activities under grizzly bear commitment GB-SC2 (DNRC 2010, Vol. 2, p.2-39). The Limestone West Timber Sale Project Area occurs outside of the recovery zone areas in Montana. DNRC has undertaken the HCP analysis and is implementing the HCP measures in partnership with the USFWS. Under Section 10 of the ESA and the DNRC HCP there is no legally required project level analysis required to specifically analyze secure areas for grizzly bears.

The security analysis conducted for elk in the DEIS indicated that security in the project area would be reduced by approximately 85% under either alternative for the project area (DEIS Table W-8, p. 206) and only 279 acres would be retained. In the same analysis, but at the scale of an area approximating the size of an elk herd home range (i.e., 93,552 acres) both alternatives would reduce security cover by 1,566 which would equate to a 3.3% reduction in the elk security analysis area (DEIS p. 210, Table W-9). Following project activities under either alternative, approximately 45,661 acres of security habitat were expected to remain, which would equate to 48.8% of the analysis area. We would expect these results to be very similar for grizzly bears.

20.) Comment p. 10 para.2 – Commenter suggests that DNRC has violated MEPA by failing to disclose that the proposed project will reduce the long-term carrying capacity of moose winter range and failed to disclose the results to the public of required consultation with Montana Fish, Wildlife and Parks to limit detrimental impacts to big game from projects.

Response: *Moose are considered a big game species in Montana and the project area lies within DFWP Hunting District 315-50 (the Bear Canyon-Trail Creek Hunting District). Two licenses for antlered bull moose are issued annually. We believe the analysis pertaining to moose in the DEIS contained on pp. 190-202 adequately and objectively describes the expected effects we believe could occur to moose, particularly those in winter. Anticipated project-related effects on wintering moose are addressed on virtually every page found in this section of the analysis (i.e., all of pp. 190 to 202). Given: 1.) that moose have the ability to tolerate deep snow conditions (Jenkins and Wright 1988, Langley 1993) 2.) that moose*

may utilize abundant browse forage species and other remaining dense forest habitat patches found in the project area and cumulative effects analysis area, 3.) that moose have large home ranges (approximately 50 sq. miles) and can exploit habitat opportunities across forested landscapes with varying degrees of canopy cover (Langley 1993, Poole and Stuart-Smith 2004:25), we would not expect measurable reductions in long-term winter range carrying capacity for moose. However, several individual moose may be displaced periodically as a result of increases in the presence of human recreational use in winter, and some long-term displacement would be possible (DEIS p.194).

During project planning and the scoping phase of project development, DNRC communicated with Montana Fish, Wildlife and Parks staff about the proposed Limestone West Timber Sale. DNRC received a comment letter from Region 3, Supervisor, Sam Sheppard -- detailing their concerns and suggestions on April 22, 2016. DNRC conducted a field review of the project area with three biologists from Fish Wildlife and Parks on September 21, 2016. DNRC addressed concerns and issues raised by the department by responding to comments, adopting several suggested mitigations, and incorporating input received into development of issue statements and alternatives. DNRC managers met again with Fish, Wildlife and Parks managers in Helena on October 17, 2018 to discuss the possible reclamation of additional roads proposed under both alternatives. Fish, Wildlife and Parks submitted a second letter on October 29, 2018 documenting their concerns that will be addressed and included in the FEIS. These concerns are also addressed in responses to comments for the project in responses to general comment number 7, on page 24 of the wildlife public comments and responses.

21.) Comment p. 10 para. 3 – Commenter states that the project would result in a loss of winter range for moose, that winter carrying capacity would be reduced in amounts equal to the total acreages proposed for logging, and that moose would be restricted in their ability to cross proposed clearcut openings in critical winter periods due to deep snow and snow crusting. The result would be a 900-acre winter travel barrier. Minimum 30-acre cover patch sizes are needed as recommended by Black et al. (1976) for elk.

Response: *In the analysis on pages 192 – 202 we acknowledge that winter habitat conditions will be altered and moose may be displaced, but given the mosaic of habitat conditions that would remain following logging and the ability of moose to use a broad range of habitats, we believe it is accurate to state near-term habitat quality would be reduced, but habitat would not be removed or lost in equal proportion to the acreages treated. We would expect moose to be able to utilize and cross clearcut openings during portions of each early and late winter period, and we would expect energetic expenditures (particularly for calves) to increase when snow depths are >65 cm (~26 in.) (Thompson and Vukelich 1981, in Poole-Smith et al. 2004). Given the availability of interspersed cover patches that would be retained following logging, moose should be able to access areas of low, moderate and high canopy cover during most of each winter. We are unaware of any suggested guidelines for minimum cover patch sizes needed by moose. In the 33,422-acre cumulative effects analysis area dense overstory cover with >60% canopy would remain on 22,221 acres (66% of the cumulative effects analysis area) following logging under the alternative with the greatest number of acres treated (Alternative A). Natural openings were historically abundant on the landscapes and vistas surrounding the city of*

Bozeman (Gruell 1983:91-94) and many are present today that moose periodically utilize and/or negotiate. We would not anticipate any appreciable decline in the numbers of moose currently wintering in the project area vicinity under either timber sale alternative.

22.) Comment p. 11 para. 1 -- Commenter that 100-foot riparian buffers would not be adequate for deer and 350 feet might meet requirements for deer, but not moose citing Black et al. (1976). Commenter also states that edge effects can extend up to 800 feet into a forest stand and reduce thermal qualities citing Hargis et al. (1999).

Response: *To clarify, no-harvest riparian buffers would be retained along all class 1 streams in the project area that would span at least 100 feet on each side of the stream – totaling 200 feet. An expanded buffer would be retained along both sides of Limestone Creek that would vary from 100 to 350 feet on each side of the stream (DEIS p. 298). These buffers were intended to facilitate travel and habitat connectivity for Canada lynx and other wildlife species, and they would be retained in conjunction with other unharvested stands and partially harvested Douglas-fir stands. The expected result would be a mosaic of large and small forest patches and cover retained under both timber sale alternatives. After review of Hargis et al. (1999) regarding effects of forest fragmentation on American martens, we were unable to find any reference to edge effects extending 800 feet into forest stands, or remarks regarding fragmentation effects or guidelines as they would pertain to moose or other cervid species.*

23.) Comment p. 11 para. 3 – Commenter states that the DEIS analysis did not acknowledge that moose winter habitat would be reduced.

Response: *Please refer to the response provided for the comment on p. 10, para. 3.*

24.) Comment p. 11 para. 3 – Commenter disagrees with DNRC's statement on p. 339 of the DEIS that moose are not an old growth obligate species.

Response: *Thomas (1979) defined the term obligate as a plant or animal that occurs in a narrowly defined habitat. Moose are capable of using a broad range of habitat conditions throughout the year. Moose may also seek out heavy forest cover under harsh winter conditions, however, they can meet their life requisites in mid-aged to mature forest stands that provide ample security, cover, and forage. Moose do not require an abundance of dead snags, coarse woody debris, abundant very large old trees and decadence characteristic of old growth forests (Green et al. 1992) to meet their life requisites.*

25.) Comment p. 11 para. 3 – Commenter states that they were unable to find any discussion in the DEIS that addressed the adverse impacts of the project on moose due to a loss of winter range. The commenter notes that the DEIS on pp. 199 and 202 that there will be no loss in carrying capacity for moose due to the project. The commenter further questions this claim given that on pp. 216, 218, 219 that loss of thermal cover will reduce carrying capacity for mule deer, white-tailed deer and elk in the project area.

Response: *These issues were addressed in detail for moose on pages 192 to 202 of the analysis. We note there is a contradiction stated by the commenter regarding what is, and is not, contained in the DEIS.*

We believe that cover reductions that would result from the timber sale alternatives analyzed in the DEIS would have noticeably less effects on moose due to: 1.) their larger size and tolerance of cold conditions (Jenkins and Wright 1988), 2.) their ability to relatively tolerate deeper snow conditions (Langley 1993, Jenkins and Wright 1988, Tyers 2003, Poole and Stuart-Smith 2004), 3.) their more isolated social structure, and 4.) their lower relative density in numbers on wintering areas. Due to their medium body size, we would expect adverse effects to elk associated with harsh winter conditions to be intermediate to those expected for deer and moose (Jenkins and Wright 1988).

26.) Comment p.12 para. 1 -- Commenter indicates that DNRC intentionally avoided addressing that the Limestone West Timber Sale Project will exacerbate ongoing population declines of moose in this landscape. Commenter also re-states that proposed harvest units would promote deep, crusted snow conditions that would impede moose travel and increase energy expenditures if forced to travel through the stands.

Response: *We believe the analysis contained on pp. 190 to 202 accurately and adequately describe the anticipated effects to moose that would result from any of the alternatives selected. We also believe that given the ability of moose to use a broad range of habitats and conditions, harvest units and interspersed stringers of unharvested stands and riparian buffer areas would provide a suitable network of cover capable of facilitating movements and maintaining potential preferred feeding areas following treatment (DEIS p. 192, 193, 195). Thus, we do not believe that removing cover from the harvest units as proposed would prevent moose from moving across the project area landscape to other usable forested areas by providing barriers that would be impossible to cross (See related comment p. 10, para. 3). However, we acknowledge that within the first several years following logging, the abundance of available winter forage in clearcut units would be low and minimally accessible during some portion of most winters, due to deep, crusted snow conditions and greater potential energy expenditures for moose. The analysis contained the DEIS will be revised to clarify this point.*

27.) Comment p. 12 para. 2, p. 13 para.1 – Commenter states that DNRC should have considered and relied more on the findings of Tyers (2003) regarding use of old growth lodgepole stands by moose in winter, and that 200 year old lodgepole pine stands are needed to provide conditions needed for moose survival.

Response: *DNRC was not aware of the PhD. dissertation by Tyers at the time of the analysis. Tyers conducted his field work on moose in Yellowstone National Park from 1985 to 2001. This was a period of time that encompassed the large wildfires in the park in 1988 and wolf re-introduction in 1995 https://www.nps.gov/yell/learn/nature/1988fires.htm. The Yellowstone National Park fires of 1988 burned 793,880 acres (1,240 sq. miles) within the park, which represented 36% of the total park area https://www.nps.gov/yell/learn/nature/1988fires.htm, and influenced the conditions he observed there. Tyers (2003) noted that moose in Yellowstone differ in their habitat use compared with other places because woody browse is not abundant in the park https://www.nps.gov/yell/learn/nature/moose.htm. The period Tyers conducted his research also coincided with an elk herd that peaked in numbers right around the time of the 1988 fires at ~19,000 animals https://www.nps.gov/yell/learn/nature/elk.htm. The*

high numbers of elk in the park had been a source of controversy for decades, particularly regarding their potential effects on browse vegetation that other species utilize such as moose and beaver https://www.nps.gov/yell/learn/nature/beaver.htm. Following the fires in 1988 and wolf reintroductions starting in 1995, numbers of both elk and moose declined dramatically. After considering the habitat conditions for moose Tyers (2003) observed in the park, we evaluated current timber cruise data for stands most likely to contain subalpine fir trees in the Limestone West Project Area. Our results indicated that approximately 184 acres of stands are present in the project area with measurable amounts of subalpine fir. All of these acres occur in the south ½ of section 9 and southwest ¼ of section 10. Of these acres, approximately 70 (38%) would be logged using clearcut treatment under Alternative A and 62 (34%) acres would be similarly logged under Alternative B. In contrast, substantial amounts of deciduous woody browse species are present in association with riparian areas and aspen stands distributed across the project area. As such, we consider the findings of Tyers (2003) to have limited applicability to the Limestone West Project Area and moose that use it. While Tyers (2003) found moose relied heavily on 200-year old lodgepole pine stands in winter, these conditions appear to vary considerably from what is present on the project area. Lodgepole pine stands on the project area average 100 years of age and have relatively few subalpine fir trees in the understory. Historically, moose likely utilized riparian draws and streams containing heavy shrub and aspen cover into the valley bottom near the city of Bozeman. Many of these such areas are now interspersed with human dwellings and subdivisions.

28.) Comment p. 13 para. 2 – Commenter stresses a number of discussion points regarding potential moose declines currently occurring in Montana and possible causes. The commenter further notes that Dickson (2012) suggests that climate change resulting in higher temperatures in both summer and winter may be causing heat stress for moose.

Response: *Acknowledgement of current observed declines of some moose populations and related research in Montana was discussed on page 190 of the DEIS. We acknowledge the suggestion by Dickson (2012) that warmer conditions in all seasons that may be associated with climate change, could influence species such as moose. We would expect that habitat conditions that would provide a diversity of canopy closure amounts, forest age classes and tree species distributed across multiple aspects and elevations to provide the greatest range of site conditions that could be exploited by the species when conditions are extreme. The Limestone West Timber Sale project would contribute to the creation and maintenance of this type of patch and cover diversity at the relatively small scale of the 2,725-acre project area.*

29.) Comment p. 13 para. 3 – Commenter suggests that the moose analysis in the DEIS is insufficient because it did not include more recent updates on causes of moose mortality in the Big Hole Study Area that could reflect declines in the Gallatin landscape.

Response: *On page 190 of the DEIS DNRC referenced the most recent annual progress report pertaining to the 10-year moose study being conducted by DFWP. During the first three years of the study, the Big Hole area has experienced relatively high mortality due to disease or health-related causes and further research is needed to better understand the causes and consequences of the mortality*

(DeCesare and Newby 2017:9). The cause and extent of the declines in the Gallatin landscape is uncertain and conclusive results are not yet available. The 10-year study is still in early stages of data collection and analysis. Additional information regarding the study may be found at the following link http://fwp.mt.gov/fishAndWildlife/diseasesAndResearch/research/moose/populationsMonitoring/default.html.

30.) Comment p. 14 para. 1 -- Commenter states that an important contributing factor to moose declines is the continual loss of winter habitat from logging of multi-storied stands with subalpine fir in the understory in stands that are virtually irretrievable because they take 200 years or more to develop (Tyers 2003).

Response: *We are not aware of any recent published information that indicates that logging is an important contributing factor to local moose declines due to reductions in winter cover. (Please refer to response to comment #27. p. 12 para. 2, p. 13 para.1 regarding habitat differences in Yellowstone National Park compared to the Limestone West Project area.). Further, Dickson (2012) stated that a possible factor in moose declines may have been related to a decrease in available forage due to curtailed logging http://fwp.mt.gov/mtoutdoors/HTML/articles/2012/MooseStudy.htm. Information compiled by Morgan (2017) demonstrates that lumber production in Montana has declined by two thirds since 1987, and an average of only 13,000 acres of timber were logged on National Forest Lands in Region 1 between 2006 and 2015. In contrast, an average of 49,000 acres were burned using prescribed fire each year during the period, and 501,000 acres per year of wildfire have affected Montana landscapes in U.S. Forest Service Region 1 between years 2006 and 2015 (Morgan 2017). During the last 10 years, 5 million acres equating to 16% of lands in the Northern Region have been affected by wildfire during the last 10 years. http://www.bber.umt.edu/pubs/seminars/2017/WoodProducts.pdf During the last 10 years, logging has played a much smaller role in altering forest communities on the landscape compared with wildfire disturbances.*

31.) Comment p. 14 para. 2 – Commenter states that DNRC failed to disclose how it is managing for elk security on the entire 6,400-acre DNRC-owned Bear Canyon Block and that they did not adequately analyze or disclose impacts to bull elk vulnerability and security associated with this block of lands.

Response: *DNRC addressed elk security and bull elk vulnerability on pp. 202 to 214 in the DEIS. DNRC examined security at the two appropriate scales of analysis; the 2,725-acre project area and a larger 93,552-acre cumulative effects analysis area that included the full 6,400-acre DNRC block with all roads and older timber cutting units accounted for. The 93,552-acre analysis area was selected as it approximates the size of an elk herd home range during the fall general hunting season (DEIS p. 204) as recommended by Hillis et al. (1991). The 6,400-acre full block of DNRC lands makes up 7% of the elk security analysis area (DEIS p. 204, Table W-7). Bull elk vulnerability was specifically addressed on pages 202, 203, 210, and 213 of the DEIS.*

32.) Comment p. 15 paras. 1, 2 and 4 – Commenter notes that DNRC analyzed elk security at the scale of the 2,725-acre project area (DEIS p. 207), but further states that there is minimal analysis

of "the planned elimination of almost all bull elk security in the project area". The commenter also questions: 1) the effects conclusions DNRC stated on p. 205 of the DEIS, 2) why DNRC provided no information as to if security is considered adequate as per the number of bulls per 100 cows, and 3) if this hunting district is meeting MFWP population objectives.

Response: *DNRC analyzed the anticipated reductions in elk security at the relatively small scale of the project area (2,725 acres) to understand the more localized effects associated with the direct impact footprint of the proposed timber sale alternatives (DEIS pp. 204 to 208). DNRC clearly indicated an 84% reduction of security habitat (1,566 acres) under both timber sale alternatives (DEIS p. 206, Table W-8). Although DNRC provided this analysis at this scale as a part of disclosing and understanding potential localized effects, applying the 30% percentage threshold proposed by Hillis et al. (1991) is not recommended at this scale. That is, a 2,725-acre area such as the project area would not be likely to hold or support the 200 – 300 elk that use the northern portion of Hunting District 301. Therefore, the 93,552 elk security analysis area was defined and used for the analysis (DEIS p. 204). At the larger scale of this area, a reduction in security habitat on 1,566 acres would equate to a reduction of 3.3% of the existing security habitat under both timber sale alternatives, and 48.8% of the 93,552 elk security analysis area would provide security cover (DEIS pp 210 and 211, Table W-9). This 48.8% amount would exceed the level of 30% recommended by Hillis et al. (1991) by 18.8%. We did not have data regarding the number of bulls per 100 cows, nor do we believe it would have added appreciably to our understanding of elk security habitat changes as a result of the proposed action alternatives. We do know that bull elk harvest has been relatively consistent at an average of 78.4 (SD=11.8) bulls per year in Hunting District 301 (https://myfwp.mt.gov/fwpPub/harvestReports).*

We note that the commenter misstates language describing effects on p. 206 of the DEIS. We believe the analysis contained in this section accurately and adequately describes potential impacts to elk security habitat and elk. Elk numbers in Hunting District 301 are currently within the objective of 400 to 600 elk set by MFWP (Mark Deleray, MFWP, pers. commun. 10/17/2018).

33.) Comment p. 15 para. 4 – *Commenter states that DNRC provided no analysis of how proposed logging and road building would affect elk vulnerability in Hunting District 301.*

Response: *DNRC did provide this analysis and we believe it is accurate and adequate. The full analysis that includes effects of roads and potential increases non-motorized recreational use and associated impacts to elk and security is included in the DEIS pp. 202 to 214.*

34.) Comment p. 16 para. 1 – Commenter questions DNRC's assessment that some treated areas will continue to provide hiding cover and no documentation is provided for how that was determined. Most understory vegetation would be destroyed during logging or after logging with prescribed burning that would substantially reduce horizontal cover.

Response: *DNRC provided objective estimates of how cover and security would be affected for elk (DEIS pp. 206 to 213) and described the methods and data used for the security analysis on pp. 202 and 203 of the DEIS. We agree that cover and security for elk would be substantially reduced under either timber*

sale action alternative (DEIS pp. 205 to 213) and we clearly noted that we anticipate an 84.8% reduction in elk security habitat (1,566-acre reduction, DEIS Table W-8) in the project area. This acreage accounts for an additional 966-acre area outside of logging units where habitat security would be impacted in a 0.5-mile disturbance buffer by recreational use associated with new, proposed restricted roads. While these roads would remain restricted to motorized public use, they were considered as high level non-motorized use roads, with similar levels of disturbance expected for open motorized roads. In this manner DNRC chose to err on a liberal estimate (albeit realistic) of how security may be affected. Throughout the analysis, DNRC stated that … "Within harvested stands, individual trees and patchy tree retention would remain, which would continue to provide some limited escape cover and visual screening for elk." We believe this is an honest and factual statement. Cover attribute data that could be used to estimate horizontal cover that would screen 90% of an elk at 200 feet were not available for this project, nor are they necessary to evaluate elk security parameters described by Hillis et al. (1991).

We agree that logging and prescribed burning could also influence cover in affected forest understories and we acknowledge the error of the incorrect hiding cover definition included in the glossary for this analysis (Please see DNRC response to comment 18 for full response).

35.) Comment p. 16 para. 2, and p. 17, para. 1 -- Commenter notes that DNRC did not identify any activity restrictions for logging during the hunting season, and that road densities would be high and habitat effectiveness would be low.

Response: *These observations are correct, and adverse effects to elk security and elk displacement would be expected. DNRC would propose to take advantage of fall and winter operating seasons if snow conditions allowed to expedite project completion and reduce the duration of disturbance that would be associated with logging activities. Spring restrictions, however, would be in place from April 1 to June 15 each year to minimize disturbance during the calving period (DEIS p. 298). The disturbance and road-related effects to elk security DNRC would anticipate during logging activities were presented on pp. 205 to 209, 212 and 213 of the DEIS.*

36.) Comment p. 17 para. 2 – Commenter states that in the adjacent and earlier Bear Canyon Project 7.7 miles of new road were constructed and that DNRC did not disclose impacts of past logging in the Bear Canyon block of 6,400 acres.

Response: *The earlier DNRC Bear Canyon Project was discussed extensively throughout the DEIS and associated cumulative effects were considered (DEIS pp. 5, 6, 61, 72, 73, 102, 103, 105, 123, 124, 125, 129, 144, 155, 204, 242, 244, 246, 250, 254, 261, 265, and 268). Please refer to the DNRC response to comment 8 that pertains to the 7.7 miles of road referred to in the Bear Canyon Project and DNRC response to comment 31 that pertains to the inclusion of the full 6,400-acre DNRC Bear Canyon Block in the analysis.*

37.) Comment p. 17 para. 4; p. 18 paras. 1, 2, 3, 4; p. 19 paras. 1-4; p. 20 paras. 1 and 2. – Commenter states that DNRC has no long-term conservation strategy for old growth forests or

associated species and references the pine marten, moose, and black-backed woodpeckers, and that DNRC's claims that they are managing for biodiversity are patently false.

Response: *Maintenance of old growth forest is considered in the calculation of DNRC's timber harvest sustainable yield (DEIS p. 12), and DNRC has administrative rules in place that define old growth [ARM 36.11.403(48)], applicable old growth logging treatments [ARM 36.11.403(49) to (52)], and that require the consideration of old growth forest and treatments during project planning and completion [ARM 36.11.418]. DNRC address old growth management considerations and effects in the DEIS on pp. 24, 25, 70, 73, 74, 76-81. Within the project area, there are 119 acres that meet the minimum criteria to be classified as old growth. These stands are primarily located in the southeast quarter of section 10 and are not included in any of the proposed harvest units (DEIS p. 76). DNRC's approach to managing for biodiversity as stated and supported by the State Forest Land Management Plan (DNRC 1996), is one that intensively manages for healthy and diverse forest conditions through emulation of natural disturbance patterns and processes (SFLMP ROD, pp. ROD-1 and ROD-2). We believe we are faithfully and appropriately managing to maintain and promote biodiversity as required and envisioned under the SFLMP and Forest Management ARMs. An evaluation of the efficacy of DNRC's programmatic old growth management policy is beyond the scope of the analysis contained in the DEIS for the Limestone West Timber Sale (DEIS pp. 321-322).*

The sensitive species DNRC evaluated in the DEIS are included on pp. 187-190 with rationale that justified their dismissal from further consideration in the analysis. American martens are not considered a sensitive species by DNRC. Habitat for martens is considered secure and they are a relatively common furbearer in Montana. Further, there is a 2.5-month winter trapping season for martens in Montana with no limit on catch. http://fwp.mt.gov/eBook/hunting/regulations/2018/furbearer/index.html However, DNRC recognizes logging of mature and older forests can adversely affect martens. As such, discussion regarding project-related effects to martens was contained on pp. 130 to 134, 136, 139, 146 to 149, 151, 153, of the DEIS.

Moose were considered in detail in the DEIS. Please see the detailed discussion in the response to comment number 27. for more information regarding moose and their use of, and dependence on, old growth forest.

Black-backed woodpeckers were considered in this section of the DEIS and were dismissed. Black-backed woodpeckers are a highly nomadic species that is highly adapted to use and thrive in stand-replacement burns of mature and old forests. While they may utilize old forests with high levels of insect activity, key habitats for their conservation given their vulnerability to salvage logging are considered recent intensively burned forests with high densities of wood-boring beetle larvae. http://fieldguide.mt.gov/speciesDetail.aspx?elcode=ABNYF07090

38.) Comment p. 20 para. 2 – Commenter states that there was no information how forests with two-storied and multi-storied canopies will be affected by the project.

Response: *The DEIS states on pages 79-80 that stands that are currently two-storied or multi-storied would not change from harvesting under Action Alternatives A or B.*

39.) Comment p. 20 para. 2 – Commenter states that DNRC claims that logging older stands will facilitate the development of future old growth.

Response: *The DEIS states on page 79 that in older stands where harvesting is proposed sufficient numbers of large trees would be left to facilitate their development into old growth upon meeting the minimum age requirement. We have revised this sentence in the FEIS to clarify that harvesting in non-old growth stands that have at least the minimum number of large live trees required by Green et al. (1992), but insufficient age to meet the minimum age criteria, would leave sufficient numbers of large trees to meet the minimum criteria of the old growth definition. Doing so would allow those stands to be classified as old growth after sufficient time has passed for them to also meet the minimum age criteria.*

40.) Comment p. 20 para. 3 – Commenter states that there was no information provided on how old growth in the project area was surveyed as per Green et al. (1991). Commenter also questions why many lodgepole pine stand were not identified as old growth, and the stand and tree ages DNRC provides for lodgepole pine and Douglas fir trees provided on p. 76 of the DEIS. Many of the lodgepole pine stands slated for clearcutting are likely "functional old growth" for pine marten.

Response: *Analysis methods for the vegetation section of the DEIS are contained on p. 74. DNRC conducted a stand-level inventory of the project area in 2016, and those results were used to identify stands that potentially met the Green et al. (1992) minimum criteria for the stand's forest type. Those stands were re-visited in 2016 to verify whether the minimum criteria specified by Green et al. (1992) were met to identify those stands as old growth in accordance with ARM 36.11.403. Plot data were collected in those stands to determine basal area, number and diameter of large trees, and age of large trees. As stated on page 76, 119 acres within the project area met the minimum criteria described by Green et al. (1992). As stated on pages 76-77, an additional 106 acres in the Nichols Creek drainage met the minimum criteria for number and size of large live trees, but not the age requirement. No lodgepole pine stands in the project area met all the minimum criteria described by Green et al. (1992) of 10 trees per acres greater than 13" dbh with an average age >140 years, and therefore were not identified as old growth. Lodgepole pine stands that contain older Douglas-fir were not classified as old growth because they do not have enough large trees to meet the minimum criteria, or the average age of those large trees is insufficient to meet the minimum criteria established by Green et al. (1992) that DNRC uses to define old growth stands on State lands. Within the lodgepole pine stands, the average age of lodgepole pine trees greater than 13" dbh was 88 years and the average age of Douglas-fir greater than 13" dbh in those stands was 113 years, both of which are well below the minimum criteria of 140 years.*

Many natural factors can influence differences in stand ages in different cover types on any given landscape. These factors can include such things as repeat disturbances of different intensity at various intervals, available seed conditions at the time of disturbance, and climate factors etc. A common occurrence in southwest Montana is that Douglas-fir stands often originate and expand outward from a

founding core of a few trees that are very old. The farther you move away from this old core of trees in the center of a stand, the younger the trees become. Terms that have been used to describe this include forest "colonization" or "encroachment." Due to this occurrence, stands of a much lower age may have several to a few large, old relic trees within their boundaries.

We agree that a number of stands proposed for harvest would provide habitat for American martens. Please see the DNRC response to comment 37 for a full discussion.

41.) Comment p. 21 para. 1 – Commenter states that Green et al. (1991) noted that old growth habitat should not be defined simply by minimum criteria, and that DNRC has no intention of meeting the biodiversity needs of wildlife dependent upon old growth.

Response: *Green et al. (1992) do state that old growth habitat should not be defined only by the minimum criteria that they describe for each old growth type and that other stand attributes should also be considered. DNRC recognizes other important forest attributes that contribute to old growth complexity such as snags (ARM 36.11.411), large downed logs (ARM 36.11.414) and decadence (36.11.413). DNRC uses the minimum values specified in Green et al. (1992) as the starting point for when stands receive additional consideration for different types of management. ARM 36.11.403 explicitly states that DNRC shall define old growth stands as those that meet the minimum criteria for number, size, and age of large trees described by Green et al. (1992). This provides DNRC with a quantifiable and objective method to definitively state whether a stand is or is not old growth. To <u>not</u> consider stands that simply meet minimums as old growth, an important consequence is that they could be considered in the pool of other younger manageable acres and not be given ample consideration for management utilizing special old growth treatment prescriptions contained in ARMs.*

Please refer to the DNRC response to Comment 37 for information regarding how DNRC views management for biodiversity.

42.) Comment p. 21 para. 2 – Commenter provides supplemental information regarding three old growth associated species including the brown creeper, black-backed woodpecker, and northern flying squirrel.

Response: *The brown creeper is considered a species of concern by the Montana Heritage Program. Brown creepers are considered an old growth-associated species and rely on late successional forests containing dead trees with large pieces of peeling bark that they nest under. A number of observations of brown creepers have been recorded in the vicinity of the project area and particularly in the vicinity of the Triple Tree Trail. Most observations have been made during fall, winter, and early spring, outside of the nesting season. Mature forest habitats that would be logged under the timber sale alternatives analyzed in the DEIS could remove habitat usable by brown creepers in the project area. At least 53% of the 2,725-acre project area would remain in dense forest cover with >60% canopy cover under both timber harvest alternatives potentially usable by brown creepers, and no old growth that would provide the most likely suitable nesting habitat for brown creepers would be harvested.*

Black-backed woodpeckers were addressed on page 188 of the DEIS. Please see DNRC response to comment 37 for additional discussion regarding black-backed woodpeckers.

Northern flying squirrels are an old growth associated wildlife species that is relatively common and widespread in western Montana, and they are not a sensitive species or listed species of concern. DNRC relies on the coarse filter approach by emulating natural disturbance patterns and processes to provide for the habitat needs for species such as the northern flying squirrel.

43.) Comment p. 22 paras. 1 to 3 – Commenter provides background discussion for a number of wildlife species and several old growth studies.

Response: *Thank you for the information.*

44.) Comment p. 23 para. 1 – Commenter suggests that the modeled amounts of historic old growth in Montana by Lessica (1996) and McKelvey et al. (1999) should be used as the basis for the management of older forest habitats to meet the needs of wildlife species.

Response: *The analysis and assessment of DNRC's programmatic policy for managing old growth forest conditions was considered beyond the scope of the Limestone West Timber Sale Analysis. There are several sources that describe both historic cover type and age class distributions; DNRC relies on Losensky's (1997) report that described historical vegetation of Montana, including cover type and age class distributions, using forest inventory data from the 1930s. Losensky described forest conditions at the climatic section scale, which is typically larger than DNRC's administrative units; thus, conditions in one locale within a climatic section may differ from those presented at a broader scale. As with any estimation of historic forest conditions, Losensky's provide a point-in-time estimate of what forests may have been like in Montana prior to European settlement. Our goal, over a long-term and consistent with our coarse filter approach, is not to exactly match a point-in-time historic age class distribution, but to approximate it over the landscape as a whole. Data that provide reliable information regarding historical amounts of old growth that can be applied at meaningful scales and locations are scant.*

45.) Comment p. 23 para. 2 – Commenter states that DNRC is not managing for biodiversity because no habitat protections are being implemented for the goshawk and great gray owl.

Response: *Please see response to comment number 1. for a full discussion regarding DNRC management for biodiversity.*

Northern goshawks were referenced and addressed in the DEIS on pp. 146, 148, 228, 298, 331, 332, 333, and great gray owls on pp. 298, 331 and 332. Both northern goshawks and great gray owls are assigned a Montana species of concern rank of G5S3, which indicates the species are globally common, widespread and abundant, and not vulnerable in most portions of their ranges, and at the state level may be potentially at risk because of limited and/or declining numbers, range, and/or habitat (MNHP 2018). A broad range of species/habitat sensitivity occurs within these coarse rankings and DNRC exercises discretion in evaluating the need to conduct more detailed evaluations for these species. Species of concern rankings are not statutory or regulatory classifications. However, these two species are afforded

legal protections from take, like most other bird species in North America, under the Migratory Bird Treaty Act of 1918. As stated in the DEIS (pp. 331-333) suitable habitat for great gray owls and northern goshawks is present in the project area. An active great gray owl nest was located in 1996 on USFS land approximately 2.8 mi. SW of the project area, and an aggressive adult goshawk was documented in 2010 approximately 1.6 mi. west of the project area during the breeding season -- indicating a potential nest site nearby. Like many other native species to the area, DNRC considers them as potentially present on the project area. Surveys have not been conducted by DNRC, and regardless of whether a survey would find them present or absent, DNRC will considers them present for purposes of project planning and analysis. Both species have home range sizes that exceed the size of the 2,725-acre project area, and both species utilize a broad range of forest structures and compositions to meet their life requisites. DNRC provides for the general habitat needs for these species under the coarse filter approach of the State Forest Land Management Plan and Forest Management Rules (SLFMP ROD p.ROD-2). DNRC addresses late successional forest habitat conditions for these and other old growth-associated species through ARMs pertaining to old growth, snag maintenance, and coarse woody debris retention. In the Limestone West Timber Sale, none of the 225 acres of old growth or potential old growth are being proposed for logging (DEIS pp.24 and 25). Further, mature forest cover with >60% canopy cover under the most aggressive timber sale alternative (Alternative A) would remain on 1,450 acres (53%) of the 2,725-acre project area and approximately 22,221 acres (66%) of the 33,422-acre cumulative effects analysis area. Nonetheless, should an active or inactive nest of either species be located during project implementation, a DNRC wildlife biologist would be contacted and appropriate mitigations would be established to protect the nest and nesting birds, should they be present.

46.) Comment p. 23 para. 3 – Commenter states that it is not clear how nests of northern goshawks or great gray owls would be detected without surveys, which creates high risks for both species.

Response: *Both species defend nest sites aggressively. Should a timber sale alternative be selected, logging would be delayed each operating season until after June 15 after nestlings have hatched and adults defend nest sites aggressively. Should a timber sale alternative be selected, a DNRC forest officer would frequently be in contact with timber operators to ensure compliance with mitigation terms in the logging contract. If a nest is found, operations near the nest would cease and a DNRC biologist would be contacted. Site-specific measures would be developed and implemented to protect the nest and birds prior to re-starting activities. Inactive nests would also be protected when detected. In this manner, risk to both species would be minimized.*

47.) Comment p. 23 para. 5 and p. 24 paras. 1 and 2 – Commenter states that logging of great gray owl and northern goshawk nesting areas will destroy them. Unless nest sites are identified, critical post-fledging areas cannot be protected.

Response: *The stands that would be logged (particularly those that would be clearcut) would not provide suitable nesting sites for 80 years of more. However, both great gray owls and northern goshawks are highly mobile, have large home ranges, and can locate other suitable nest sites across the landscape, as long as ample patches of mature forest are present. When active nests are detected, activity*

restrictions within a broad area around the active nest would be promptly developed to ensure that fledging young would be minimally disturbed.

48.) Comment p. 23 para. 3 – Commenter states that clearcut logging will destroy goshawk foraging areas for 3 to 4 decades.

Response: *Goshawks are foraging generalist predators that will hunt in dense forest, open stands and forest grassland/shrubland ecotones (MNHP 2018). As such, goshawks will successfully prey on numerous species found in forest openings, meadows and recent clearcuts. Logged areas are likely to continue to provide foraging habitat and opportunities for goshawks immediately following harvest completion, should a timber sale alternative be selected.*

49.) Comment p. 24 paras. 3 and 4 – Commenter states that habitat for snowshoe hares and red squirrels (which are important prey species for goshawks) would be removed and fragmented, resulting in their decline.

Response: *Both of these prey species are adaptable to fragmented forest conditions and we note that as these lands lie along a forest-grassland ecotone influenced by historical disturbances, a natural mosaic of open slopes and meadows within a forest matrix is already present on this landscape. It is likely that forest conditions would have been much more open and retracted at the turn of the 20th century (Gruell 1983). Further, mitigation for snowshoe hares would be provided by retaining advanced regeneration thickets comprised of subalpine fire, spruce and Douglas-fir where possible as desirable structure and species diversity for snowshoe hares and visual screening (DEIS p. 228). This measure would be incorporated for the primary purpose of mitigation for Canada lynx in conjunction with the HCP, however, it could similarly lessen effects for goshawks as well. Snowshoe hares and red squirrels are common in the vicinity of the project area. At the relatively small scale of the disturbance footprint for the Limestone West Timber Sale Alternatives and substantial number of prey species goshawks utilize as a part of their normal foraging strategies, we would anticipate minimal adverse effects to goshawks related to forage species availability and abundance overall due to habitat removal and fragmentation.*

50.) Comment p. para. – Commenter states that the DNRC proposed timber sale project would convert suitable goshawk habitat into habitat preferred by red-tailed hawks.

Response: *Both of these raptor species are adaptable to fragmented forest conditions, but differ in their nesting habitat preferences and foraging strategies. We note that as these lands lie along a forest-grassland ecotone influenced by historical disturbances, a natural mosaic of open slopes and meadows within a forest matrix is already present on this landscape. It is likely that forest conditions would have been much more open and retracted at the turn of the 20th century (Gruell 1983). Thus, suitable habitat for red-tailed hawks is already present in this landscape and existing matrix of habitat conditions. Our assessment is that both species would likely be able to continue using this local landscape following proposed treatments under Alternative A or B.*

51.) Comment p. 25 paras. 1 and 3 – Commenter states that DNRC has provided fake mitigation measures for cavity-nesting birds in violation of MEPA, and the level of impact on cavity-

associated wildlife in the DEIS is misleading the public. There is little evidence provided by DNRC to indicate the suite of snag-associated species will be conserved in areas managed for timber production.

Response: *DNRC's strategy for management of snags and coarse woody debris aims to ensure that legacy snags and downed logs remain in logged areas to ensure that habitat attributes and site productivity are maintained for decades to come. While DNRC attempts to reduce revenue loss by emphasizing retention of large cull trees and snags for habitat purposes, large, live trees retained are often sound and have economic value that instead gets dedicated to maintenance of biodiversity and protection for snag-associated species. Recruitment tree constraints are also considered in DNRC calculation of sustainable yield. DNRC acknowledges that logging cannot completely emulate snag densities and legacy material resulting from natural disturbances such as fire, and economically remove wood fiber. DNRC also acknowledged in the DEIS that available snag habitat would be reduced on all treated acres in the project area, which would be expected to reduce the local abundance of species that require snags as a life requisite in proportion to the acreage and numbers affected (DEIS pp. 140, 141, 142, 143). The effects to snag and downed log abundance and associated effects to wildlife are described in detail on pages 36, 37, 91, 138 to 144 of the DEIS and mitigations are stated on page 227.*

52.) Comment p. 26 para. 1 -- Commenter states that DNRC's snag management strategy is inadequate for species such as the black-backed and northern three-toed woodpecker and other species.

Response: *DNRC acknowledges that these two woodpecker species require snags in greater abundance than the minimum number of large snags and recruitment trees DNRC retains to maintain legacy material on the landscape. DNRC specifically addresses habitat for these two fire-associated species through implementation of administrative rule ARM 36.11.438, which is applied in conjunction with wildfire events and salvage logging. This rule requires that at least 10% of burned acreage broadly representative of the burn and stand conditions is retained unharvested with special consideration provided for black-backed woodpecker habitat. DNRC defines black-backed woodpecker habitat as …"fire-killed stands of trees greater than 40 acres, less than five years since disturbance, and with greater than 40 trees per acre that are greater than or equal to nine inches DBH. In fire salvage situations, DNRC also retains all sub-merchantable burned trees standing where soil, slope stabilization and human safety allow, which are valuable as feeding substrate. Given the high level of ongoing insect infestations in the forests of western Montana, and that an average of 501,000 acres have burned annually in U.S. Forest Service Region 1 during the last decade – over 5 million acres total (Morgan 2017), habitat availability at the present time is likely not limited or limiting for these species.*

53.) Comment p.27 paras. 2 and 3 -- DNRC has no strategy to promote conservation of wolverines, and the Limestone West Project is eroding wolverine habitat on DNRC lands. The assessment of low effects was not supported with any analysis. For example, impacts on wolverine prey species such as snowshoe hares and red squirrels was not acknowledged, nor were reductions in carrying capacity of big game winter range.

Response: *DNRC provided a detailed analysis for wolverines regarding the likely effects of the Limestone Timber Sale proposal including logging, road construction, and associate public recreational use on pp. 181 to 186 of the DEIS. The assessment of low effects was influenced by three key factors: 1) at the landscape scale, the types and presence of forests and other vegetation do not appear to define wolverine habitat as much as the presence of abundant food supplies (i.e., ungulate carrion) and sparsely inhabited wilderness areas that contain persistent snow until late spring (Kelsall 1981; Banci 1994; Aubry et al. 2007; DEIS p. 182), 2) wolverines are a medium-sized carnivore that is an opportunistic scavenger in the winter and opportunistic omnivore in summer, consuming prey that includes snowshoe hares, marmots, ground squirrels, red squirrels, salmon, porcupine, mice, voles, and berries, and 3) wolverine home ranges in Montana are approximately 150 square miles (Hornocker and Hash 1981). Given the very large home range sizes of wolverines and the numerous species of small mammals they utilize as prey, forest cover removal from 373 to 601 acres on the outskirts of an occupied wolverine territory would be inconsequential. Please see the numbered rationale used for the specific effects determinations made regarding wolverine on pp. 184 and 186 of the DEIS. See also responses to comments 20, 21, and 25 regarding ungulate carrying capacity and winter range for additional information.*

54.) Comment p. 27 para. 4, p. 28 paras. 1 and 2 – Commenter states that impacts of forest development and associated roads have been well documented for wolverines (Eg. Fisher et al. 2013, and Stewart et al. 2016, Scrafford et al. 2018). Wolverines avoid developed landscapes, and roads, regardless of traffic volumes.

Response: *In the Limestone West Timber Sale proposal, no other land management or forest development projects or structures would be constructed. We believe that when considering recent published research findings and their applicability, it is important to consider that DNRC anticipates that future administrative use of restricted roads during spring, summer and fall months would average less than 1 vehicle trip per week and no trips in winter. This is in stark contrast to average use levels observed by Scrafford et al. (2018) at >26 trips per day (24 hr period) in winter and >23 trips per day in summer. In this instance, the level of administrative use DNRC would anticipates for administrative use, more closely approximates "no use" when compared with the low use class (0-30 vehicles/12 hours, i.e., 0 to 60 trips per 24-hour day) reported by Scrafford et al. (2018). The prevalence of annual trapping may also alter behavior of wolverines. The anticipated effects of the proposed harvest activities, road construction, and likely public recreational use of the new roads and associated potential displacement of wolverines was discussed in detail on pp. 182 to 186 of the DEIS. All roads would be restricted from motorized public access following their use. Scrafford et al. (2018) suggested mitigating effects to wolverines by implementing road closures. We believe the analysis accurately and adequately addresses the concerns associated with timber harvesting and road-related impacts on wolverines.*

55.) Comment p. 28 para. 3 and p. 29 para. 1 – Commenter states that: 1) DNRC is not implementing a conservation strategy for Canada lynx, 2) that the project area is occupied by lynx, 3) federally designated critical habitat occurs adjacent to the project area, 4) that DNRC is

violating the ESA and MEPA requirement to maintain biodiversity, and 5) DNRC is not providing reliable information on environmental impacts to the public.

Response: *DNRC addressed impacts related to Canada lynx in detail on pp. 164 to 172 of the DEIS. DNRC currently manages for Canada lynx under the Forest Management HCP.* ***Please see response to Comment 3 for full discussion regarding the HCP and its implementation.*** *We agree that the area is considered occupied by Canada lynx, and 1,738 acres of suitable habitat occur in the project area (DEIS pp. 165, 166). Gehman (2017) failed to find tracks or capture photo images of the species during winter surveys, however DNRC recognizes that individuals could occasionally use the project area or travel through the vicinity. As stated on p. 166 in the DEIS, Critical Habitat has been described for the Greater Yellowstone Area in Unit 5 (USFWS 2009). However, the project area occurs outside of the Critical Habitat boundary and no federal funding or permitting would be required for the proposed project. Thus, federal measures required under the Critical Habitat designation would not be applicable to this project.* DNRC is if full compliance with the ESA and MEPA. To clarify, there is no statutory requirement to maintain biodiversity that is tied to compliance with the ESA or MEPA. DNRC is using the best available data, and we have been transparent, objective and factual in our assessments, conclusions, and disclosures.

56.) Comment p. 29 paras. 2 and 3 – Commenter states that findings regarding lynx habitat needs of Kosterman (2014) and Holbrook et al. (2017) are not cited in the DEIS and their design recommendations were not applied to the harvest design. The DNRC lynx analysis ignores previous harvest and road construction in the 6,400-acre Bear Canyon Block. Lynx management was not a consideration of harvest design.

Response: *As a part of HCP compliance, DNRC and USFWS representatives are required to evaluate and discuss new science that may warrant special consideration for the conservation of listed species. DNRC and the USFWS discussed the findings of Kosterman (2014) in their Annual HCP Monitoring Meeting in 2015 (http://dnrc.mt.gov/divisions/trust/forest-management/hcp/hcp-announcements/HCPAnnualReport_2015_FINAL.pdf). The USFWS also considered Kosterman (2014) in DNRC's recent HCP Amendment (http://dnrc.mt.gov/divisions/trust/forest-management/hcp/hcp-announcements/FinalDNRCSupplementalEIS.pdf). The USFWS also considered the Kosterman (2014) and Holbrook et al. (2017) findings in their revised Biological Opinion for the HCP Amendment (USFWS 2018).*

Maintaining interconnected mature and sub-mature spruce-fir forest with high horizontal cover is key for conserving lynx in Montana, and both the 2010 Final HCP EIS (Chapter 4-370) and 2011 Biological Opinion (Chapter III, p. III-94), as well as the draft SEIS concluded that these attributes are maintained by the 2010 HCP lynx conservation strategy (Chapter 3, pp. 86 and 87). While we are gaining an improved understanding of lynx habitat requirements and the threats to lynx associated with climate change, our current understanding of the habitat needs of lynx has not changed since the 2011 Permit issuance.

DNRC has the programmatic obligation to consistently apply conservation commitments contained in the HCP for its 50-year term.

The effects associated with prior timber sales and reductions in cover are captured in the tabular results contained in Table W-4 of the DEIS. All forest polygons not possessing cover were considered non-habitat. ***See also responses to comments 8,31, and 36 for additional details regarding how these projects were considered.***

Given the required mitigations for snag and coarse woody debris retention, provision of habitat connectivity, and requirement to retain patches of submerchantable spruce, subalpine fir and Douglas-fir trees in harvest units, the lynx was clearly given consideration during project planning and analysis.

57.) Comment p. 30 para. 2 -- Commenter states that lodgepole pine is the most nutritious conifer tree for snowshoe hares and its key importance was never recognized in the Limestone West DEIS.

Response: *Snowshoe hares forage on a wide variety of herbs, graminoids and browse species (Foresman 2012), including lodgepole pine. However, lodgepole pine can only be used as a forage when green limbs are within reach of foraging hares. Thus, mature lodgepole pine stands where most trees have lower limbs that have evanesced well above normal snowlines (such as those in the Limestone West Project Area) provide very limited foraging opportunities for snowshoe hares. Dead lodgepole pine trees have no forage value for snowshoe hares. Excellent habitat for Canada lynx and snowshoe hares can be provided in dense stands of subalpine fir and spruce where lodgepole pine is absent.*

58.) Comment p. 30 para. 3 – Commenter states that DNRC did not adequately consider adjacency between mature forests and young, regenerating forests as noted by Kosterman (2014) and Holbrook et al. (2017).

Response: *The issue of adjacency is inherently addressed as a part of the harvest unit layout as proposed under both Alternative A and B (DEIS pp. 17 and 18). Both timber sale alternatives would result in a matrix of young-aged and mature forest cover in 20 to 30 years, presumably desirable for snowshoe hares and Canada lynx.*

59.) Comment p. 31 para. 1 and 2 – Commenter states that clearcuts are avoided by lynx and the project will create a huge travel barrier of lynx that is impenetrable.

Response: *We agree that lynx generally avoid traveling across openings, particularly in winter, as do snowshoe hares. However, the literature contains many examples of lynx crossing large, unforested openings (Roe et al. 2000 as referenced in 68 FR 40076-40101, July 3, 2003, p. 40079). Thus, we do not believe the clearcut units with 600-foot to cover size requirements, and reserve patches intermingled in them will create a barrier that lynx cannot cross. Further, forested stringers and retention patches would provide ample cover to facilitate movement of lynx across the project area for decades to come. As clearcut stands regenerate, habitat conditions for both Canada lynx and snowshoe hares would be expected to improve.*

60.) Comment p.31 para. 2 – Commenter states that adverse impacts to lynx will be considerable due to fragmentation and would result in take. DNRC has not disclosed if this take will be, or has been, approved by the USFWS as required under the ESA.

Response: *We believe the analysis for Canada lynx contained in the DEIS accurately and adequately addresses expected impacts to lynx that would result from the Limestone West Timber Sale alternatives (DEIS pp. 164 to 172). Incidental take for DNRC's Forest Management Program was programmatically analyzed and then permitted on the date of HCP adoption, Incidental Take Permit issuance and implementation in February 2012.* ***Please refer to response to comment 3. for full discussion regarding the HCP and permitting of incidental take.***

Detailed DNRC Responses to Montana Ecosystems Defense Council and Alliance for the Wild Rockies Comments on the Limestone West Timber Sale Draft EIS

(Original comments were paraphrased)

1.) Comment page 1, para. 4. Commenters state that DNRC's claim that they are managing for biodiversity are patently false because there is no old growth plan for the Bear Canyon block of lands or Limestone West Project area. Maintaining old growth habitat and associated species can never happen without a long-term old growth plan.

Response: *Maintenance of old growth forest is considered in the calculation of DNRC's timber harvest sustainable yield (DEIS p. 12), and DNRC has administrative rules in place that define old growth [ARM 36.11.403(48)], applicable old growth logging treatments [ARM 36.11.403(49) to (52)], and that require the consideration of old growth forest and treatments during project planning and completion [ARM 36.11.418]. DNRC address old growth management considerations and effects in the DEIS on pp. 24, 25, 70, 73, 74, 76-81. Within the project area, there are 119 acres that meet the minimum criteria to be classified as old growth. These stands are primarily located in the southeast quarter of section 10 and are not included in any of the proposed harvest units (DEIS p. 76). DNRC's approach to managing for biodiversity as stated and supported by the State Forest Land Management Plan (DNRC 1996), is one that intensively manages for healthy and diverse forest conditions through emulation of natural disturbance patterns and processes (SFLMP ROD, pp. ROD-1 and ROD-2). We believe we are faithfully and appropriately managing to maintain and promote biodiversity as required and envisioned under the SFLMP and Forest Management ARMs. An evaluation of the efficacy of DNRC's programmatic old growth management policy is beyond the scope of the analysis contained in the DEIS for the Limestone West Timber Sale (DEIS pp. 321-322).*

2.) **Comment page 1, paras. 5 and 6.** Commenters state that DNRC conducted no fine filter analysis for old growth cavity nesters like goshawk and great gray owl, or other associated species like pine marten, moose, and black-backed woodpecker. The proposed timber sale alternatives would result in more unsuitable habitat for pine martens and that large unroaded and unfragmented stands of older forest habitat must be maintained. A long-term plan is needed. Why was a management strategy for old growth forests and old growth habitat not included in the DEIS?

DNRC Response: *The sensitive species DNRC evaluated in the DEIS are included on pp. 187-190 with rationale that justified their dismissal from further consideration in the analysis. American martens are not considered a sensitive species by DNRC. Habitat for martens is considered secure and they are a relatively common furbearer in Montana. Further, there is a 2.5-month winter trapping season for martens in Montana with no limit on catch.* http://fwp.mt.gov/eBook/hunting/regulations/2018/furbearer/index.html *However, DNRC recognizes*

logging of mature and older forests can adversely affect martens. As such, discussion regarding project-related effects to martens was contained on pp. 130 to 134, 136, 139, 146 to 149, 151, 153, of the DEIS.

Moose were considered in detail in the DEIS. Please see the detailed discussion in the response to comment number 27. for more information regarding moose and their use of, and dependence on, old growth forest.

Black-backed woodpeckers were considered in this section of the DEIS and were dismissed. Black-backed woodpeckers are a highly nomadic species that is highly adapted to use and thrive in stand-replacement burns of mature and old forests. While they may utilize old forests with high levels of insect activity, key habitats for their conservation given their vulnerability to salvage logging are considered recent intensively burned forests with high densities of wood-boring beetle larvae.
http://fieldguide.mt.gov/speciesDetail.aspx?elcode=ABNYF07090

3.) **Comment page 1, para. 7.** Commenters remarked that the DEIS on p. 76 states that DNRC only identified 119 acres of old growth, or 4% of the project area – all located outside proposed treatment units. No detailed analysis or disclosure on how old growth in the project area was surveyed as per Green et al. (1991).

DNRC Response: *Analysis methods for the vegetation section of the DEIS are contained on p. 74. DNRC conducted a stand-level inventory of the project area in 2016, and those results were used to identify stands that potentially met the Green et al. (1992) minimum criteria for the stand's forest type. Those stands were re-visited in 2016 to verify whether the minimum criteria specified by Green et al. (1992) were met to identify those stands as old growth in accordance with ARM 36.11.403. Plot data were collected in those stands to determine basal area, number and diameter of large trees, and age of large trees. As stated on page 76, 119 acres within the project area met the minimum criteria described by Green et al. (1992). As stated on pages 76-77, an additional 106 acres in the Nichols Creek drainage met the minimum criteria for number and size of large live trees, but not the age requirement. No lodgepole pine stands in the project area met all the minimum criteria described by Green et al. (1992) of 10 trees per acres greater than 13" dbh with an average age >140 years, and therefore were not identified as old growth.*

4.) **Comment page 1, para. 7.** Commenters state that lodgepole pine old growth was not specifically addressed in the DEIS.

DNRC Response: *Relevant information pertaining to the lodgepole pine cover type and stands were addressed on pp. 74 to 81 and pp. 84 to 87 of the DEIS. The discussion regarding old growth stands in the project area was included on p. 76 of the DEIS. No lodgepole pine stands in the project area met all the minimum criteria described by Green et al. (1992) of 10 trees per acres greater than 13" dbh with an average age >140 years, and therefore were not identified as old growth. Lodgepole pine stands that contain older Douglas-fir were not classified as old growth because they do not have enough large trees to meet the minimum criteria, or the average age of those large trees is insufficient to meet the minimum*

criteria established by Green et al. (1992) that DNRC uses to define old growth stands on State lands. Within the lodgepole pine stands, the average age of lodgepole pine trees greater than 13" dbh was 88 years and the average age of Douglas-fir greater than 13" dbh in those stands was 113 years, both of which are well below the minimum criteria of 140 years.

5.) **Comment page 1, para. 7. and page 2, para. 1** Commenters state that historic baseline conditions of old growth should be used to guide management of older forest habitats to meet the needs of wildlife such as, migratory songbirds, small mammals like pine marten and moose.

DNRC Response: *The analysis and assessment of DNRC's programmatic policy for managing old growth forest conditions was considered beyond the scope of the Limestone West Timber Sale Analysis. There are several sources that describe both historic cover type and age class distributions; DNRC relies on Losensky's (1997) report that described historical vegetation of Montana, including cover type and age class distributions, using forest inventory data from the 1930s. Losensky described forest conditions at the climatic section scale, which is typically larger than DNRC's administrative units; thus, conditions in one locale within a climatic section may differ from those presented at a broader scale. As with any estimation of historic forest conditions, Losensky's provide a point-in-time estimate of what forests may have been like in Montana prior to European settlement. Our goal, over a long-term and consistent with our coarse filter approach, is not to exactly match a point-in-time historic age class distribution, but to approximate it over the landscape as a whole. Data that provide reliable information regarding historical amounts of old growth that can be applied at meaningful scales and locations are scant.*

Issues regarding old growth associated birds and other species were dismissed from further analysis, because no old growth stands were proposed for treatment as a part of either Action Alternative A or B. Other relevant information regarding birds potentially of concern on the project is contained on pp. 187 to 189 of the DEIS. Information pertaining to northern goshawks and great gray owls was provided in the DEIS on pages 146, 148, 228, 298, 331, and 332.

Please see response to comment number 2 for information regarding pine marten.

Effects to moose were described on pages 192 to 202 in the DEIS. While Tyers (2003) found moose to be closely associated with old growth lodgepole pine with well-developed subalpine fir understories, other studies have documented use of different habitats (Langley 1993, Jenkins and Wright 1988, Poole and Stuart-Smith 2004). Moose are capable of using a broad range of habitat conditions throughout the year. Moose may also seek out heavy forest cover under harsh winter conditions, however, they can meet their life requisites in mid-aged to mature forest stands that provide ample security, cover, and forage. Moose do not require an abundance of dead snags, coarse woody debris, abundant very large old trees and decadence characteristic of old growth forests (Green et al. 1992) to meet their life requisites.

6.) **Comment page 2, para. 2.** Commenters state that the DEIS claims that DNRC does not have to protect existing or developing old growth because this will facilitate the development of old growth (DEIS p. 79).

DNRC Response: *The DEIS states on page 79 that in older stands where harvesting is proposed sufficient numbers of large trees would be left to facilitate their development into old growth upon meeting the minimum age requirement. We have revised this sentence in the FEIS to clarify that harvesting in non-old growth stands that have at least the minimum number of large live trees required by Green et al. (1992), but insufficient age to meet the minimum age criteria, would leave sufficient numbers of large trees to meet the minimum criteria of the old growth definition. Doing so would allow those stands to be classified as old growth after sufficient time has passed for them to also meet the minimum age criteria.*

7.) **Comment page 2, para. 2.** Commenters state that DNRC grudgingly conceded that there may be some adverse impacts to some wildlife species in an inadequate MEPA analysis.

DNRC Response: *A comprehensive analysis was provided on pp. 123 to 228 of the DEIS. We believe the analysis is an accurate, objective and adequate portrayal of impacts to species of concern in the vicinity of the Limestone West Project Area.*

8.) **Comment page 2, para. 3.** Commenters state that Green et al. (1992) remarked that old growth habitat should not be defined only by minimum criteria, and lodgepole pine old growth stands and stands that are approaching old growth minimums were not identified as old growth.

DNRC Response: *Green et al. (1992) do state that old growth habitat should not be defined only by the minimum criteria that they describe for each old growth type and that other stand attributes should also be considered. DNRC recognizes other important forest attributes that contribute to old growth complexity such as snags (ARM 36.11.411), large downed logs (ARM 36.11.414) and decadence (36.11.413). DNRC uses the minimum values specified in Green et al. (1992) as the starting point for when stands receive additional consideration for different types of management. ARM 36.11.403 explicitly states that DNRC shall define old growth stands as those that meet the minimum criteria for number, size, and age of large trees described by Green et al. (1992). This provides DNRC with a quantifiable and objective method to definitively state whether a stand is or is not old growth. To <u>not</u> consider stands that simply meet minimums as old growth, an important consequence is that they could be considered in the pool of other younger manageable acres and not be given ample consideration for management utilizing special old growth treatment prescriptions contained in ARMs. We believe that if we were to begin considering various stands as old growth that do not meet the minimum standards of Green et al. (1992) we would place our program in a position of legitimate criticism.*

9.) **Comment page 2, para. 3.** Commenters question that 100-year old lodgepole stands are not the same age as 130-170 year old-mixed conifer stands and it doesn't make sense that there are different aged stands in the same area. Lodgepole stands in the project area are most likely old growth, or are approaching old growth due to reduced pine beetle activity in 2011 (DEIS p. 82). With canopy cover of 60% or greater these stands are likely old growth that has gone underreported or deliberately misrepresented – excellent habitat containing spruce/fir

understory favored by pine marten and moose. DNRC is not telling the truth and is making hollow claims about meeting biodiversity needs of wildlife dependent on old growth.

DNRC Response: *Please see response to comment #4 for information regarding tree ages of lodgepole pine and Douglas-fir within lodgepole pine stands and their relationship to the Green et al. (1992) minimum criteria that DNRC uses as its old growth definition. Many natural factors can influence differences in stand ages in different cover types on any given landscape. These factors can include such things as repeat disturbances of different intensity at various intervals, available seed conditions at the time of disturbance, and climate factors etc. A common occurrence in southwest Montana is that Douglas-fir stands often originate and expand outward from a founding core of a few trees that are very old. The farther you move away from this old core of trees in the center of a stand, the younger the trees become. Terms that have been used to describe this include forest "colonization" or "encroachment." Due to this occurrence, stands of a much lower age may have several to a few large, old relic trees within their boundaries.*

Mountain pine beetle activity since 2011 as referenced on p. 82 of the DEIS and canopy cover levels of 60% or greater are not parameters used or considered in determining if stands meet the minimum criteria for the number of large old trees required by the methods of Green et al. (1992). Given our best objective assessment, old growth stands would not be treated as a part of any of the alternatives considered in the DEIS.

The State Forest Land Management Plan (SFLMP), Forest Management Administrative Rules of Montana (ARMs), and Habitat Conservation Plan (HCP) for forested State Trust Lands provide extensive programmatic analyses and the policy framework for how DNRC conducts forest management activities manages for biodiversity (DNRC 1996, ARMs 36.11.401 to 36.11.471, DNRC 2012). Management of forested state trust lands incorporates both coarse and fine filter approaches and emulation of natural disturbance patterns and processes consistent with those species evolved with in Montana. It is important to note that both natural and man-caused disturbances have adverse effects to some species of wildlife. DNRC's policy framework addresses many habitat conditions for many species. The treatments proposed in the action alternatives identified for this project comply with all requirements of the SFLMP, ARMs and HCP. Discussion regarding how DNRC envisions managing for biodiversity is provided in the DEIS on the following pages 1, 11, 12, 21, 74, at the bottom of p. 319, and 320, and the bottom of p. 324, and 325. In applicable sections of the DEIS, resources specialists provided key references to applicable policies and references relevant to this overarching guiding framework, which collectively define how DNRC manages for biodiversity, including wildlife species. As required by MEPA, objective analysis and descriptions of the anticipated impacts from the proposed activities appropriately comprise the majority of the content contained in the DEIS.

10.) **Comment page 2, paras. 4 and 5.** Commenters state that northern goshawks and great gray owls are Montana species of concern and no habitat protections are being implemented for them. No field surveys were conducted for them in the project area (DEIS pp. 331, 333). DNRC

claims that nesting areas will be protected, but without surveys active nest sites are likely to be destroyed before they can be protected (DEIS p. 228, p. 298).

DNRC Response: *Northern goshawks were referenced and addressed in the DEIS on pp. 146, 148, 228, 298, 331, 332, 333, and great gray owls on pp. 298, 331 and 332. Both northern goshawks and great gray owls are assigned a Montana species of concern rank of G5S3, which indicates the species are globally common, widespread and abundant, and not vulnerable in most portions of their ranges, and at the state level may be potentially at risk because of limited and/or declining numbers, range, and/or habitat (MNHP 2018). A broad range of species/habitat sensitivity occurs within these coarse rankings and DNRC exercises discretion in evaluating the need to conduct more detailed evaluations for these species. Species of concern rankings are not statutory or regulatory classifications. However, these two species are afforded legal protections from take, like most other bird species in North America, under the Migratory Bird Treaty Act of 1918. As stated in the DEIS (pp. 331-333) suitable habitat for great gray owls and northern goshawks is present in the project area. An active great gray owl nest was located in 1996 on USFS land approximately 2.8 mi. SW of the project area, and an aggressive adult goshawk was documented in 2010 approximately 1.6 mi. west of the project area during the breeding season -- indicating a potential nest site nearby. Like many other native species to the area, DNRC considers them as potentially present on the project area. Surveys have not been conducted by DNRC, and regardless of whether a survey would find them present or absent, DNRC will considers them present for purposes of project planning and analysis. Both species have home range sizes that exceed the size of the 2,725-acre project area, and both species utilize a broad range of forest structures and compositions to meet their life requisites. DNRC provides for the general habitat needs for these species under the coarse filter approach of the State Forest Land Management Plan and Forest Management Rules (SLFMP ROD p.ROD-2). DNRC addresses late successional forest habitat conditions for these and other old growth-associated species through ARMs pertaining to old growth, snag maintenance, and coarse woody debris retention. In the Limestone West Timber Sale, none of the 225 acres of old growth or potential old growth are being proposed for logging (DEIS pp.24 and 25). Further, mature forest cover with >60% canopy cover under the most aggressive timber sale alternative (Alternative A) would remain on 1,450 acres (53%) of the 2,725-acre project area and approximately 22,221 acres (66%) of the 33,422-acre cumulative effects analysis area. Nonetheless, should an active or inactive nest of either species be located during project implementation, a DNRC wildlife biologist would be contacted and appropriate mitigations would be established to protect the nest and nesting birds, should they be present. With or without surveys, there is always some degree of risk associated with not detecting nests, and birds can be missed in surveys. However, both of these species are large, visible birds that can be detected when present.*

11.) **Comment page 2, para. 6.** Commenters state that clearcut logging will destroy goshawk foraging areas by reducing habitat for snowshoe hares and red squirrels. Logging will fragment habitat and result on loss of old growth, which will eliminate old growth-associated species for decades or forever.

DNRC Response: *Both snowshoe hares and red squirrels are adaptable to fragmented forest conditions and we note that as these lands lie along a forest-grassland ecotone influenced by periodic historical disturbances. Thus, a natural mosaic of open slopes and meadows within a forest matrix is already*

present on this landscape. It is likely that forest conditions would have been much more open and retracted at the turn of the 20th century (Gruell 1983). Further, mitigation for snowshoe hares would be provided by retaining advanced regeneration thickets comprised of subalpine fir, spruce and Douglas-fir where possible as desirable structure and species diversity for snowshoe hares and visual screening (DEIS p. 228). This measure would be incorporated for the primary purpose of mitigation for Canada lynx in conjunction with the HCP, however, it could similarly lessen effects for goshawks as well. Snowshoe hares and red squirrels are common in the vicinity of the project area. At the relatively small scale of the disturbance footprint for the Limestone West Timber Sale Alternatives and substantial number of prey species goshawks utilize as a part of their normal foraging strategies, we would anticipate minimal adverse effects to goshawks related to forage species availability and abundance overall due to habitat removal and fragmentation. Given our best objective assessment, old growth stands would not be treated as a part of any of the alternatives considered in the DEIS.

12.) **Comment page 2, paras. 7 and 8.** Commenters note that DNRC acknowledged that snags and associated wildlife would be reduced by the project (DEIS p. 140), but that DNRC's snag management strategy is deceptive. Further, snags have been reduced considerably on DNRC lands in the Bear Canyon block of lands, which is having adverse effects on snag-dependent wildlife.

DNRC Response: *Concerns related to snags and down logs were addressed in detail in the DEIS on pp. 138 to 144. As stated in the DEIS, during harvest operations at least 2 large snags and 2 large recruitment trees per acre (both >21 inches dbh) would be retained across the project area. In situations where snags and recruitment trees meeting this minimum size are not present, the largest available snags and trees would be retained. This would be the case on many sites in the project area due to the limited availability of very large trees and snags. Available snag habitat would be reduced on all treated acres in the locality of the project area, which would be expected to reduce the local abundance of species that require snags as a life requisite in proportion to the acreage and numbers affected (DEIS p. 141). Regarding cumulative effects and other DNRC lands, all non-forested acres or sparsely forested acres were considered in affected acreages that would not provide suitable habitat for most snag-associated species. Thus, existing snag amounts would not be influenced on 27,017 acres (98%) of the 27,618 total forested acres in the cumulative effects analysis area under Alternative A, or on 27,245 acres (99%) of the 27,618 total forested acres in the cumulative effects analysis area under Alternative B (DEIS pp. 142 and 143).*

13.) **Comment page 2, para. 8.** Commenters state that logging is not mitigation for old growth and it should not be presented as mitigation. Logging old- growth forest habitat for "old growth maintenance" and/or "old growth restoration" is a hypothesis not supported by sound science. Currently, old-growth habitat on the Bozeman Unit is rare and highly fragmented, except perhaps in the project area.

DNRC Response: *Pages 320 and 321 of the DEIS provide several references of studies providing scientific support that silvicultural harvest treatments can retain and promote the development of old-*

growth forest attributes. Green et al. (1992) also noted that old growth forests are not necessarily 'virgin' or 'primeval', and that old growth can develop following human disturbance. By their nature, lands on the Bozeman Unit are primarily comprised of scattered parcels. DNRC has recognized the fact that much of DNRC's ownership may exist as islands in matrixes of private lands, which constrains management options (ARM 36.11.416). Under such circumstances, DNRC cannot commit to providing for conditions made rare on other ownerships. For this project no old growth would be harvested and all patches would remain connected to other mature forest in the project area and surrounding landscape.

14.) **Comment page 3, para.1.** Commenters state that DNRC has failed to establish a programmatic, snag policy, or old-growth strategy to ensure that biodiversity is sustained over the long term. There is no alternative the adopts "longer rotations" or preserves connectivity between old growth stands.

DNRC Response: *The State Forest Land Management Plan (SFLMP), Forest Management Administrative Rules of Montana (ARMs), and Habitat Conservation Plan (HCP) for forested State Trust Lands provide extensive programmatic analyses and the policy framework for how DNRC conducts forest management activities and manages for biodiversity over the long term (DNRC 1996, ARMs 36.11.401 to 36.11.471, DNRC 2012). Management of forested state trust lands incorporates both coarse and fine filter approaches and emulation of natural disturbance patterns and processes consistent with those species evolved with in Montana. It is important to note that both natural and man-caused disturbances have adverse effects to some species of wildlife. DNRC's policy framework addresses many habitat conditions for many species. The treatments proposed in the action alternatives identified for this project comply with all requirements of the SFLMP, ARMs and HCP. Discussion regarding how DNRC envisions managing for biodiversity is provided in the DEIS on the following pages 1, 11, 12, 21, 74, at the bottom of p. 319, and 320, and the bottom of p. 324, and 325. In applicable sections of the DEIS, resources specialists provided key references to applicable policies and references relevant to this overarching guiding framework, which collectively define how DNRC manages for biodiversity, including wildlife species. DNRC also recognizes other important forest attributes that contribute to old growth habitat such as snags (ARM 36.11.411), large downed logs (ARM 36.11.414), patch connectivity (ARM 36.11.415), and decadence (ARM 36.11.413), and must consider and retain as feasible, these important habitat attributes as required by administrative rules. Programmatic policies are in place and given our best objective assessment, old growth stands would not be treated as a part of any of the alternatives considered in the DEIS, and all are connected with other large forested patches of mature forest on the landscape. We believe that a reasonable and appropriate range of alternatives was analyzed given the scope, scale and objectives for the project.*

15.) **Comment page 3, para. 2.** Commenters state that DNRC has failed to protect old growth or snags in amounts "historically present on the landscape as a result of natural disturbances." ARM 36.11.418.

DNRC Response: *Historical disturbances related to the Limestone West Timber Sale Project and how they influenced current stand conditions on the project area were considered on pp. 72 and 73 of the*

DEIS. For this project no old growth would be harvested and all patches would remain connected to other mature forest in the project area and surrounding landscape. Snag retention requirements follow those as required under the DNRC HCP and ARM 36.11.411.

16.) **Comment page 3, para. 3.** Commenters state that water quality and habitat needs to sustain a cold-water fishery have not been protected. There is no credible science to support DNRC's fifty-foot stream buffers. Inadequate riparian buffers will fail to protect streams from increases in sediment and temperature, and trout populations cannot be sustained in the long run.

DNRC Response: *The literature supporting DNRC's establishment of RMZs measuring the 100-year SPTH with a 50-foot no-harvest buffer & the remainder partially managed is summarized in the Final HCP, Chapter 2, pp. 2-66 C 2-73. Since publication of the Final HCP, DNRC has modified its commitment AQ-RM1 to require an RMZ with a minimum width equal to the 100-year site index tree height (or 80 feet, whichever is greater). Additionally, this issue is again addressed in the USFWS' BO, which finds that the HCP provides a high degree of certainty that the buffer widths & associated RMZ prescriptions will likely avoid or minimize the effects on riparian functions that support the habitat needs of the all native and non-native fish species. No RMZ harvest is proposed in the Limestone West timber sale.*

17.) **Comment page 3, para. 4.** Commenters state that the relationship between land management activities and habitat requirements for sustaining a cold-water fishery is well documented in scientific literature. Limestone Creek is going to be severely impacted if the project goes forward. The impacts will extend downstream onto private land, where fish populations and water rights will be adversely impacted. Roadbuilding alone will be a disaster. On the steep slopes in the project area with unstable soils the impacts will be long-lasting and cause permanent damage to the watershed.

DNRC Response: *DNRC addressed the potential impacts to water quality, channel form and function, and downstream beneficial uses on pages 116-120 of the DEIS. We understand that while no cold-water fisheries are supported on state owned lands within the project area, downstream effects are still probable but that the magnitude of such effects are significantly muted and masked when compared to the impacts associated with urban development.*

18.) **Comment page 3, paras. 5 and 6.** Commenters state that no new roads should be built, not even temporary roads. The existing road network is already too large. Roads fragment habitat and increase mortality for wildlife such as elk, moose, grizzly bear and lynx. Roads degrade stream habitat for fish. Roads take acres out of the timber-growing base. Roads fragment wildlife habitat and reduce security and habitat effectiveness. There are already too many roads on the Unit, and surrounding the project area.

DNRC Response: *We understand that some members of the public are concerned about the amount of new roads proposed under Alternatives A and B and are taking that into careful consideration. DNRC*

also must responsibly consider infrastructure needs that would improve access for long-term future management of the area and increase access for potential fire suppression activities (DEIS p. 2). DNRC provided a detailed analysis of potential road effects on wildlife including security and habitat fragmentation in the DEIS (pp. 127 to 137, pp. 147 to 164, pp. 174 to 186, pp. 192 to 202, pp. 205 to 227), and described how amounts and densities would change under Alternatives A and B in the analysis of effects on grizzly bears (DEIS, p. 175 Table W-5, and p. 179 Table W-6). Under Alternative A, which has the greatest amount of new, permanent restricted road proposed at 5.3 miles, upwards of 31.2 acres would be compromised for future timber production. However, with no road infrastructure, no timber value could ever be realized because trees could never be accessed for removal and sale.

19.) **Comment page 3, paras. 7-10; and page 4 paras. 1-5.** Commenters provided numerous references to the enabling act and other Montana statutes that provide the framework for management of state trust lands, references to the legislature's intent regarding management of state trust lands, and references to two legal cases pertaining to management of state trust lands.

DNRC Response: *We made note of these references. We believe we are following all applicable laws, rules and policies in development of this project proposal.*

20.) **Comment page 4, para. 5.** Commenters state that the DNRC and Land Board must manage trust lands in the best interests of the state, which includes considering environmental consequences of actions affecting wildlife habitat, water quantity and quality and other environmental values.

DNRC Response: *We believe we have addressed all relevant issues related to this project in the DEIS including wildlife habitat, water quantity and water quality, as well as several others.*

21.) **Comment page 4, para. 7.** Commenters state that DNRC and the Land Board cannot continue to manage trust lands to obtain revenues for trust beneficiaries while ignoring non-monetary public values ("other worthy objects") universally recognized and cherished by most Montanans.

DNRC Response: *We believe there are numerous places in the DEIS analysis and features associated with project design that demonstrate that important non-monetary public values were not ignored. For example, no old growth stands would be entered for treatment under Action Alternatives A or B (DEIS p. 76). Further, proposed new permanent roads would be gated and would not be left open for motorized access. Many roads needed for the project would be reclaimed following use. Many other mitigations and requirements to minimize adverse effects to wildlife would also be in place that are listed in the stipulations and specifications section of the analysis (DEIS pp. 294-300). While we have considered and addressed many non-monetary values, we believe that it is important to recognize that state trust lands may not simply be set aside and managed as preserves without compensation (MCA 77-5-116).*

22.) **Comment page 4, para. 8.** Commenters state that the DEIS failed to adequately evaluate the cumulative effects of past, present and foreseeable future logging plans in this area. Simply listing past, and on-going projects is not sufficient. The current condition must be disclosed.

DNRC Response: *Cumulative effects were specifically addressed at the end of each subsection of the DEIS for all resource topics analyzed. Comprehensive lists of past and ongoing projects were also provided in addition to other specific analyses pertaining to changes in cover and roads, for example, which incorporated the influences of cover amount changes and road increases for all past projects and natural disturbances on the landscapes identified in each analysis. The current condition as it pertains to each resource category addressed in the DEIS was disclosed at the beginning of each subsection of the analysis (DEIS pp. 74, 82, 87, 93, 94, 98, 114, 128, 138, 144, 154, 165, 172, 182, 190, 203, 214, 222, 231, 238, 244, 260, 267).*

23.) **Comment page 4, para. 8.** Commenters state that the condition of the road network is poor, and in need of maintenance, and/or a serious reduction in the overall mileage.

DNRC Response: *DNRC conducted a road sediment inventory of all existing project area roads during project development and design. Roads were found to meet Best Management Practices and had significant vegetative cover resulting to no identified sediment sources to stream channels.*

24. **Comment page 4, para. 8.** Commenters state that hiding cover has been severely compromised, leaving inadequate amounts of canopy cover and winter and summer thermal cover.

DNRC Response: *Changes in the amounts of cover for hiding, security and thermal protection and the related effects of anticipated changes under the proposed action alternatives were addressed in detail in the DEIS. The potential for adverse effects to some species were noted and disclosed. Summary statics regarding how different types of cover would be affected were provided in in the DEIS in Tables W-1 (p. 131), W-2 (p. 136), W-5 (p. 175), W-6 (p. 179), W-8 (p. 206), W-9 (p. 210), W-10 (p. 211).*

25.) **Comment page 5, para. 1-3 .** Commenters state that logging and roadbuilding will always adversely affect soil productivity. DNRC also failed to analyze and disclose the impact noxious weed infestations will have on the physical and biological condition of soils. Weed invasions may dramatically change organic matter distribution and nutrient flux – but this was ignored.

They stated further that no calculations were made by DNRC to demonstrate how the productivity of the land has been adversely affected in the project area and Unit-wide by noxious weed infestations. DNRC has failed to adequately consider soil productivity, which is indeed an important element in any sustained-yield timber operation. Soil must be considered an "other worthy object," as defined by the §77-1-202, MCA? Conversely, weeds adversely impact soil productivity, making it a critical area of analysis in any and all logging actions.

DNRC Response: *The current condition and potential effects of each alternative on noxious weed presence and spread is presented on pages 94 and 95 of the DEIS. We state that Alternatives A and B are likely to facilitate the spread of noxious weeds or introduce new weeds to the project area because of soil disturbance and reduction of canopy cover associated with road building and timber harvesting. We outline measures that we would take to minimize noxious weed introduction and spread on page 95, including pre- and post-treatment of weed populations, equipment washing, limiting soil disturbance, re-seedling roads with grass, and development of a comprehensive weed management plan including herbicides and biological controls. Collectively, we expect these activities to minimize the potential for the spread of noxious weeds in the project area.*

As explained on pages 325-326, we acknowledge that noxious weeds can affect soil nutrient flux and organic matter distribution; however, because the primary locations of noxious weed spread are along roads and landings that would be permanently converted from forest to transportation use, we expect minimal impacts to soil productivity from noxious weeds.

ECONOMICS

1. DNRC received 26 comments that generally expressed concerns regarding the revenue generated from the project in comparison to the valuable viewshed and potential harm to Bozeman's tourism and recreation industries of the proposed alternatives. Comments also generally expressed concern that changes to the viewshed may reduce adjacent property values.

DNRC RESPONSE: *DNRC acknowledged in the analysis of both Action Alternatives A and B the anticipated changes that would be expected to occur to the viewshed. The treatments in question are designed to emulate a natural disturbance such as fire and insect and disease, both of which naturally change the viewshed overtime, sometimes rapidly. The forest environment is dynamic and will continually change over time with or without forest management. While DNRC recognizes there are many values associated with the Limestone West Project Area, DNRC must also pursue tangible revenue sources that can be realized by Trust beneficiaries and meet sustainable yield requirements required under statute.*

In 2012, DNRC implemented a larger timber sale adjacent to the Limestone West project currently proposed. DNRC is not aware of any data that support the notion that the timber sale reduced recreational use in the area or had any impact on surrounding property values.

RESPONSE TO COMMENTER ID: 5, 33, 35, 36, 38, 41, 45, 49, 50, 52, 65, 66, 69, 76, 82, 83, 92, 99, 114, 126, 148, 154, 155, 160, 163, 168

2. DNRC received a comment that the Trust beneficiaries can receive the greatest short-term deposits if the conservation license alternative is chosen, and a separate timber sale revenue can be produced elsewhere to achieve the Sustainable Yield.

DNRC RESPONSE: *DNRC agrees that the cumulative beneficiary receipts would be higher if both the Conservation License and an alternative timber sale can be accomplished in the near term. The intent of the sustainable yield policy is not purely to hit a target regardless of the geographic source. The Sustainable Yield is designed to ensure all the available state forested lands are harvested when a stand reaches peak mean annual increment and does not to exclude lands based on geographical location. The lands included in the Limestone West Timber harvest proposal are part of the sustainable yield calculation and meet the conditions for harvest. This is an important consideration for DNRC as responsible managers of Trust assets.*

RESPONSE TO COMMENTER ID: 114

3. DNRC received a comment that suggests the local lost timber industry revenues would be replaced by a separate timber sale and therefore negative consequences of a no-harvest alternative in local markets are overstated.

DNRC RESPONSE: *It is not certain a replacement timber sale would produce raw materials for the same local wood products supply chain. Given the larger proportionate share of Montana's timber supply coming from Trust Lands in recent years, local mills may not be able to substitute the potential loss of delivered logs from their regional resource supply chain. Negative economic effects can also occur from a no-action alternative concerning salvage-condition trees where a particular forest stand is left unmanaged in a dead or dying state. Unmanaged dead stands can produce negative externalities and extend economic losses by promoting unwanted silvicultural conditions and slowing down the rate at which a replacement stand matures. These effects are not quantified in this analysis but do represent an increase in the total economic opportunity costs for a no-action alternative decision concerning salvage or overgrown stands.*

RESPONSE TO COMMENTER ID: 114

4. DNRC received a comment that suggests if stimulating local economies is a goal of DNRC forest management, many counties in the state with state forests are in tougher shape than Gallatin and Park Counties.

DNRC RESPONSE: *Stimulating the economy is not a goal of the Limestone West Timber Sale, nor is maintaining the local timber industry, but they are results of such a project. The Gallatin and Park County economies are in better condition than many counties in Montana. While the economy is strong in the Bozeman area, the timber industry isn't. Having a thriving timber industry and infrastructure in place is essential to maintaining our ability to continue to manage our forests. This project is part of an ongoing broader mission to manage assets for the beneficiaries across the state.*

RESPONSE TO COMMENTER ID: 114

5. DNRC received a comment that suggested there is no rationale for the 10-year Conservation License term, and given the short term, the purchaser of a conservation license could simply compensate the Trust Beneficiaries for interest lost over the 10-year period.

DNRC RESPONSE:

The conservation license term and rationale were discussed in detail on pp. 344 to 351 of the DEIS. As stated in this section of the analysis, stand mean annual increment (MAI) in the lodgepole pine stand reaches its peak (culmination of mean annual increment -- CMAI) between 10 and 20 years into the future before declining sharply. From the standpoint of long-term sustainable timber production, harvesting at CMAI represents the optimum age for harvesting, while delaying harvest past that point results in an inability to achieve sustainable yield targets over time because of the both the declining growth rate of the existing stand and delay in establishment and growth of future stands. Based on the economic analysis, the best value for the Trust beneficiaries would be a 10-year conservation license term. However, we estimated that MAI in lodgepole pine stands reaches its peak CMAI between 10 and 20 years into the future before declining sharply. Calculation of values and terms for this project must consider other important factors other than simply lost interest over 10 years and must accommodate timber sale bidders as required under 77-5-208 MCA. Other values and terms include the size of the land base under consideration, potential for value loss as a result of deferral due to dead and dying trees, and the potential for being able to manage the stands to capture value at some relatively near point in the future.

RESPONSE TO COMMENTER ID: 92, 114

6. DNRC received a comment suggesting the conservation license term should be equal to the projected harvest rotation length due to equal Trust Beneficiary revenues. The comment also suggested DNRC should acknowledge value to beneficiaries of preserving recreational attributes of land by avoiding timber harvest.

DNRC RESPONSE: *The direct revenues distributed to the Trust Beneficiaries are only one facet of the management of Trust assets. Real timbered property managed as an asset is best managed for long term forest health, which faces continued damage under a no-action or Conservation License alternative due to projected forest conditions. Other real benefits of Action Alternatives A and B include capital improvements in the form of road infrastructure, which increase DNRC's ability to manage the land and respond to wildland fires, which would threaten state, federal, and private property along the Bozeman Wildland Urban Interface.*

DNRC can demonstrate successful harvests on other Trust Land assets have not changed recreational use, and in some cases have improved recreational use and allowed management of the recreational use to reduce recreation-related impacts. While DNRC recognizes there are many values associated with the Limestone West Project Area, DNRC must also pursue tangible revenue sources that can be realized by Trust beneficiaries and meet sustainable yield requirements required under statute.

RESPONSE TO COMMENTER ID: 114

7. DNRC received a comment suggesting the Conservation License revenue should be considered to net 100% of the bid amount for distribution to Trust Beneficiaries, whereas the DEIS treated the Conservation License revenue as netting the same amount as the timber sale.

DNRC RESPONSE: *Regardless of the bidding outcome, the bulk of the workload in this project is happening before the actual sale bidding is finalized. After awarding the bid, in the case of a timber sale, the DNRC work is essentially bookwork on truck tickets and harvest monitoring. Were the conservation license to win the bid, DNRC would also incur a small amount of bookwork and monitoring, although it's possible this monitoring could amount to less staff time than required for the timber sale. While the Conservation License has a similar net revenue to the timber harvest alternatives, the Conservation License does not provide the significant benefits of forest management and new road infrastructure to beneficiaries which would result from a timber harvest.*

RESPONSE TO COMMENTER ID: 114

8. DNRC received a comment requesting to change the assertion in the DEIS that if timber from this project is not sold, equivalent volumes would need to come from sales on other trust forest lands in the State. The commenter acknowledged ARM 36.11.453(7) stating the volume of timber associated with a timber conservation license may be counted as part of the annual timber sale requirement for the state timber sale program.

DNRC RESPONSE: *DNRC specifically calls your attention the word "may" in the ARM. Programmatically, the sustainable yield calculation provides guidance on how much timber should be managed and harvested annually to achieve the desired silvicultural conditions stated in programmatic plans. This means DNRC is more likely to continue work on other timber stands which are due for management, than to accommodate this optional element of the ARM.*

RESPONSE TO COMMENTER ID: 114

9. DNRC received a comment that the forest product economies of the Gallatin and Park County are small and that amount of revenue and jobs produced by the timber sale would be small in comparison to the larger negative impact the project would have on the tourism and recreation industry.

DNRC RESPONSE: *DNRC plans timber sale projects according to forest health and programmatic policies, plans and rules. Stimulating local economies is not a goal of timber sales, but certainly is a result. DNRC is not aware of any evidence that DNRC timber sales have negatively affected tourism or recreation-based economies in Montana.*

RESPONSE TO COMMENTER ID: 114

10. DNRC received a comment that the DEIS assertion that the Conservation License alternative, "produces no estimated direct or indirect employment effects in the timber sale area" is misleading, and points again to the size and benefits of the area's tourism and recreation industry.

DNRC RESPONSE: *The Conservation License has no stated intent or goals other than deferring timber harvest activities. The conservation license alternative would cause no changes to the existing economic conditions, and as a result, no direct or indirect employment effects of choosing that alternative action would result.*

RESPONSE TO COMMENTER ID: 114

11. DNRC received a comment that the economic analysis in the DEIS should be eliminated from the FEIS due to its lack of analysis of the sale area's tourism and service-based economy.

DNRC RESPONSE: *The economic analysis in the DEIS observes economic conditions directly related to the proposed actions. There is no analysis of the tourism, service and recreation industries because there is no direct linkage of the proposed action to these industries. While tourism and recreation are important considerations, DNRC must pursue tangible revenue sources that can be realized by Trust beneficiaries and meet sustainable yield requirements required under statute.*

RESPONSE TO COMMENTER ID: 114

TRANSPORTATION

1. DNRC received 8 comments that generally expressed concerns regarding harvest activities may disturb the Triple Tree Trail.

DNRC RESPONSE: *Activities proposed under preferred Alternative B are not in the vicinity of the Triple Tree Trail and will not affect the trail or its use.*

RESPONSE TO COMMENTER ID: 49, 54, 66, 81, 86, 121, 132, 155

2. DNRC received 37 comments that expressed concerns regarding increases in road densities may result in motorized use of the area which may adversely affect current recreational use of the area.

DNRC RESPONSE: *All roads proposed under Alternative B would be classified "Restricted Class "A". As described in the Transportation section of the Draft EIS:*

"With the exception of the Bear Canyon Timber Sale (November 2011 – July 2014), the motorized traffic the past 15 years on the Bear Canyon road system has consisted of occasional administrative visits by state personnel (about once or twice a month during summer and fall), use by our grazing lessee, weed abatement contractor and the occasional firewood permit holder."

While road traffic in the project area will increase during harvest activity, future administrative use is expected to mirror the past 15 years. "Restricted Class A" roads are typically closed to motorized recreational use through a barrier. In the case of Alternative B this barrier would likely be a Powder River Gate secured by a lock and chain. This allows emergency and administrative access while prohibiting motorized access.

RESPONSE TO COMMENTER ID: 33, 35, 37, 54, 56, 57, 61, 66, 67, 71, 81, 86, 90, 95, 96, 99, 108, 115, 117, 121, 122, 125, 137, 138, 143, 144, 146, 150, 151, 152, 153, 155, 157 161, 162, 164, 165

3. DNRC received 9 comments that generally expressed concerns regarding increased public use would occur as a result of increased road densities associated with the project, including concerns that increased public use will result in higher fire danger.

DNRC RESPONSE: *The Transportation section of the Draft EIS noted that under each alternative "Recreational use would be expected to increase as it has historically due to population pressures in the Gallatin Valley." The increase of recreational use as a result of more road miles being open to recreational use was not analyzed in the Transportation Section. This increase was further explored in the Recreation Section under the heading Cumulative Effects of Action Alternative A and B on page 265*

of the DEIS where the analysis stated "… cumulative effects would result in increases in roads available for nonmotorized public access…".

RESPONSE TO COMMENTER ID: 12, 44, 45, 66, 72, 143, 150, 152, 157

4. DNRC received general comments that expressed concerns regarding traffic and other harvest activities may adversely affect the public along the haul route both within the project area and on the public roads leading to the harvest area.

DNRC RESPONSE: *Traffic and other harvest activities will likely adversely affect the public along the haul route within the project and on the public roads leading to the harvest area. As noted in the Transportation Section Direct and Indirect Effects of Action Alternative B:*

"People recreating would encounter crews in the early morning, at the end of day and throughout the day during harvest activities. Log trucks could be encountered delivering logs to the mill or returning from the mill though timber hauling activities would be restricted on weekends and major holidays to eliminate traffic conflict from recreational use. To provide for safety the travel routes for the crews and the log trucks would be posted at the entrance to the State land at the end of Mt. Ellis Lane and at the trail head at Triple Tree Trail. There would be "Logging Operations" signs placed at the entry ways to active harvest areas and there may be some additional "Log Truck" signs placed on state lands."
DNRC specifically analyzed the effect on traffic in the section titled Cumulative Effects of Action Alternative B as follows:

"Log hauling and support traffic on Mt. Ellis lane could result in up to 16% increase traffic on days that experience peak use. The log trucks and support traffic would be contractually obligated to follow county regulations of speed and weight limits. The county has indicated that Mt. Ellis Lane has weight restrictions placed on it primarily in the spring due to concerns over degradation of the road base exacerbated by moisture, but if moist conditions were to occur at other times of the year the weight could be restricted as needed.

Log hauling and support traffic on Bozeman Trail Road could result in up to a 2% increase in traffic on days that experience peak use. Gallatin County has concerns regarding the degradation of the chip seal on the road during periods of moist conditions and could apply weight limits if conditions are warranted."

In planning for these effects DNRC has proposed various restrictions and provisions to minimize the negative effect on the public. As stated in the Cumulative Effects of Action Alternative B:

"Mitigations to the haul route would include limiting hauling on both roads to dry or frozen conditions, just as they would be on the State transportations system. As a measure to limit dust and reduce the needed maintenance on Mt. Ellis Lane a treatment of magnesium chloride would be applied, in coordination with the Gallatin County Road Department in front of residences requesting it, once conditions were dry enough to for it to be effective. Light grading to the road surface could be provided to help maintain a smooth the driving surface for the hauling activities, if it was approved by the Gallatin County Road Department. The use of compression brakes "jake brakes" would be contractually prohibited on the Mt. Ellis Lane haul route to reduce noise. At the intersections of Mt. Ellis Rd. and

Bozeman Trail Road signs would be places within 500 feet of the intersection on both direction of traffic indicating that Log truck would be entering the roadway."

RESPONSE TO COMMENTER ID: 4, 10

5. DNRC received 1 comment concerned with the wear and tear of logging traffic on Mount Ellis Lane.

DNRC RESPONSE: *In planning for these effects DNRC has proposed various restrictions and provisions to minimize the negative effect on Mount Ellis Lane. As stated in the Cumulative Effects of Action Alternative B:*

"As a measure to limit dust and reduce the needed maintenance on Mt. Ellis Lane, a treatment of magnesium chloride would be applied, in coordination with the Gallatin County Road Department in front of residences requesting it, once conditions were dry enough to for it to be effective. Light grading to the road surface could be provided to help maintain a smooth the driving surface for the hauling activities, if it was approved by the Gallatin County Road Department."

Mt. Ellis Lane is a County Road and maintenance is performed on a regular basis by the County, funded by taxes paid by road users through vehicle registrations, property and fuel taxes.
RESPONSE TO COMMENTER ID: 10

6. DNRC received a comment recommending amendments to Alternative B which included reclaiming all new road construction and including additional trails adjacent to the existing Triple Tree Trail.

DNRC RESPONSE: *Thank for your interesting in the development and decision for the Limestone West timber sale project. After public comment on the Draft EIS has been reviewed, a Final EIS (FEIS)will be published that summarizes public comment and refines individual resource analyses, if warranted. This will be the document the decision maker will use to select a alternative. At this point, the decision maker has the authority to modify or amend the selected alternative as long as it still meets project objectives and would remain within the potential range of effects as described in the FEIS. The reasoning for the decision will be disclosed in the Record of Decision, typically published fifteen days after the FEIS. Considering this, thank you for your recommendations regarding the transportation plan for alternative B. Reclaiming all project roads was considered by DNRC but was eliminated as it did not meet the project objective of enhancing and expanding the transportation network for future management and fire suppression needs. DNRC initially scoped this timber sale project on March 1, 2016 and again on June 9, 2016 for public input. No formal trail proposals were received during these scoping periods or during project development. At this point, the Limestone West timber sale project does not include or analyze for specific trail proposals. DNRC will always review and consider projects proposed by individuals or other organizations on state land that meet trust land obligations, but at this point in the project DNRC is considering a forest management project and not a trails project.*

RESPONSE TO COMMENTER ID: 4

RECREATION

1. DNRC received 37 comments that generally expressed concerns regarding harvest activities may adversely affect recreational experiences within the project area including hiking, skiing, hunting, horseback riding, birding, mountain biking, and general enjoyment of the area.

DNRC RESPONSE: *This issue was addressed in detail for the project area in the Recreation Analysis on pages 261 to 265 of the DEIS.*

Recreational use of these lands would be expected to increase as it has historically due to population pressures in the Gallatin Valley.

Under Action Alternatives A and B, those who choose to recreate in the area during the workweek daytime hours would likely meet harvest-related traffic on designated haul routes and operators in harvest units. Effects on these recreationists are expected to be moderate to high. Those who choose to recreate in the area on the weekend or during the workweek evenings would likely meet minimal harvest-related traffic and harvesting operations, except for occasional operators. Effects to these recreationists are expected to be minimal.

Under Action Alternative A, a selective harvest would occur along approximately 1,000 feet of Triple Tree Trail located in the south and southeast portion of the trail. The trail would be closed in this area for 2-3 days as a safety precaution until harvest activities are completed.

During and following harvest activities, the extent of managed acres is expected to be very noticeable. Over time, the harvest units are expected to blend in with the surrounding landscape, appearing more consistent with other managed areas throughout the area. The increased accessibility to the area due to the new transportation system would be desirable to some recreationists and undesirable to other recreationists.

RESPONSE TO COMMENTER ID: 33, 35, 37, 54, 56, 57, 61, 65, 66, 67, 71, 81, 86, 90, 95, 96, 99, 108, 115, 117, 121, 122, 125, 137, 138, 143, 144, 146, 150, 151, 152, 153, 155, 157, 162, 164, 165

2. DNRC received 6 comments that generally expressed concerns regarding harvest activities may affect the amount, location, use, and condition of many existing trails and other developed facilities within the project area.

DNRC RESPONSE: *This issue was addressed in detail for the project area in the Recreation Analysis on pages 261 to 265 of the DEIS.*

The general recreational use within the project area depends on the use of one authorized hiking trail, Triple Tree Trail, and other existing infrastructure not specifically developed by the DNRC for recreation.

Recreational use of these lands would be expected to increase as it has historically due to population pressures in the Gallatin Valley.

Under Action Alternatives A and B, those who choose to recreate in the area during the workweek daytime hours would likely meet harvest-related traffic on designated haul routes and operators in harvest units. Effects on these recreationists are expected to be moderate to high. Those who choose to recreate in the area on the weekend or during the workweek evenings would likely meet minimal harvest-related traffic and harvesting operations, except for occasional operators. Effects to these recreationists are expected to be minimal. The location, condition and use of unauthorized pioneered trails would be affected. These pioneered trails are expected to eventually be reestablished by recreationists and again become part of the pioneered trail system in the project area.

Under Action Alternative A, a selective harvest would occur along approximately 1,000 feet of Triple Tree Trail located in the south and southeast portion of the trail. The trail would be closed in this area for 2-3 days as a safety precaution until harvest activities are completed. The location and condition of this trail would not be affected.

RESPONSE TO COMMENTER ID: 19, 43, 67, 81, 86, 132

3. DNRC received 1 comment that generally expressed concerns regarding increase in road densities may result in increased recreational use and trails, changing the character of the project area.

DNRC RESPONSE: *This issue was addressed in detail for the project area in the Recreation Analysis on pages 261 to 265 of the DEIS.*

Recreational use of these lands would be expected to increase as it has historically due to population pressures in the Gallatin Valley. New, permanent road construction would lead to increases in nonmotorized public access although the actual amounts and types are uncertain.

Under Action Alternatives A and B, new road would be constructed and the new transportation system would result in increased non-motorized access to the project area. Roads designated as restricted roads would have all associated infrastructure, including drainage structures, remaining in place at the completion of the timber sale. Those who choose to recreate on these roads would experience an increase in accessible lands following project completion. This road system would provide bicycle, pedestrian, and horseback access to the southwest portion of the project area. Like current conditions, no roads would be managed for motorized public use.

Roads designated as reclaimed roads would have all culverts removed, seeded to grass, and closed with debris leaving the road prism in place. These reclaimed roads would eventually be utilized by recreationists and become part of the pioneered trail system in the project area. Those who choose to recreate along this road system may find it difficult to travel along these abandoned roadways during snow-free periods. These reclaimed roads would be expected to receive low to moderate use like the existing pioneered trails.

RESPONSE TO COMMENTER ID: 161

AESTHETICS

1. DNRC received 34 comments that generally expressed concerns regarding harvest activities, such as road construction, slash/debris piles and harvest design, may adversely affect the visual quality of the landscape as seen from within the proposed project area, neighboring properties, and the City of Bozeman.

DNRC RESPONSE: *DNRC analyzed and disclosed the potential direct, indirect and cumulative effects the proposed actions would have the aesthetics of the area on pages 269 through 278 of the DEIS.*

Depending on the observation point, upwards of 25% to 17% of the proposed harvest units would be visible under action alternative A and B, respectively. New road construction would account for 38 to 100 percent of the total road miles visible from each observation point, resulting in large increases from existing conditions. Likewise, new road construction throughout the project area would be apparent particularly along steeper terrain where the cut and fill slopes would be more exaggerated. Where possible, trees would be retained along roads in attempts to minimize the impacts to the viewshed as seen from the observation points. Alternative B, by design, has fewer visible miles of new road construction than Alternative A.

Cumulatively, timber harvest has been a regularly occurring activity throughout the Gallatin Face, particularly on USFS land. Harvesting activities and road building on both City of Bozeman and USFS land are expected to continue into the future with projects concentrated within the western portion of the cumulative effects analysis area (USFS BMW Timber Sale Project and City of Bozeman thinning projects). Likewise, thinning of forested stands on private ownerships along the Face may occur in the future. These activities, in conjunction with those proposed under the Action Alternative would result in an increase of total harvested acres and road miles visible from each observation point.

RESPONSE TO COMMENTER ID: 33, 37, 43, 50, 51, 54, 67, 81, 86, 87, 90, 117, 121, 122, 125, 126, 127, 132, 138, 144, 146, 147, 150, 153, 155, 157, 158, 160, 161, 163, 164, 165, 166, 167

2. DNRC received 2 comments that generally expressed concerns regarding harvest activities associated with this project may increase local noise levels.

DNRC RESPONSE: *DNRC analyzed and disclosed the potential direct, indirect and cumulative effects the proposed actions would have on Noise on pages 276 and 278 of the DEIS.*

Noise would be generated by harvest operations, harvest related traffic, road construction and administrative oversight. This could be expected to be present for the entire season of harvest, June 15th through March 15th of the following year, for the duration of the harvest of 2 to 3 years. Activities would mostly occur during the typical business work week (Monday through Friday) and cease each day by

evening except for occasional operations. Road construction, harvesting operations and timber hauling are expected to be louder than other harvest related traffic. This louder traffic would constitute 75 to 80 percent of the expected traffic trips.

Cumulative effects to noise during the daytime and on weekends would be expected to increase beyond current levels found within the cumulative-effects analysis area. Noise emanating from the harvest activities associated with the proposed actions would be concentrated in the areas surrounding the proposed harvest units and roads. Cumulative effects to noise during the evenings would not be expected to increase beyond current levels found within the area.

RESPONSE TO COMMENTER ID: 86, 115

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